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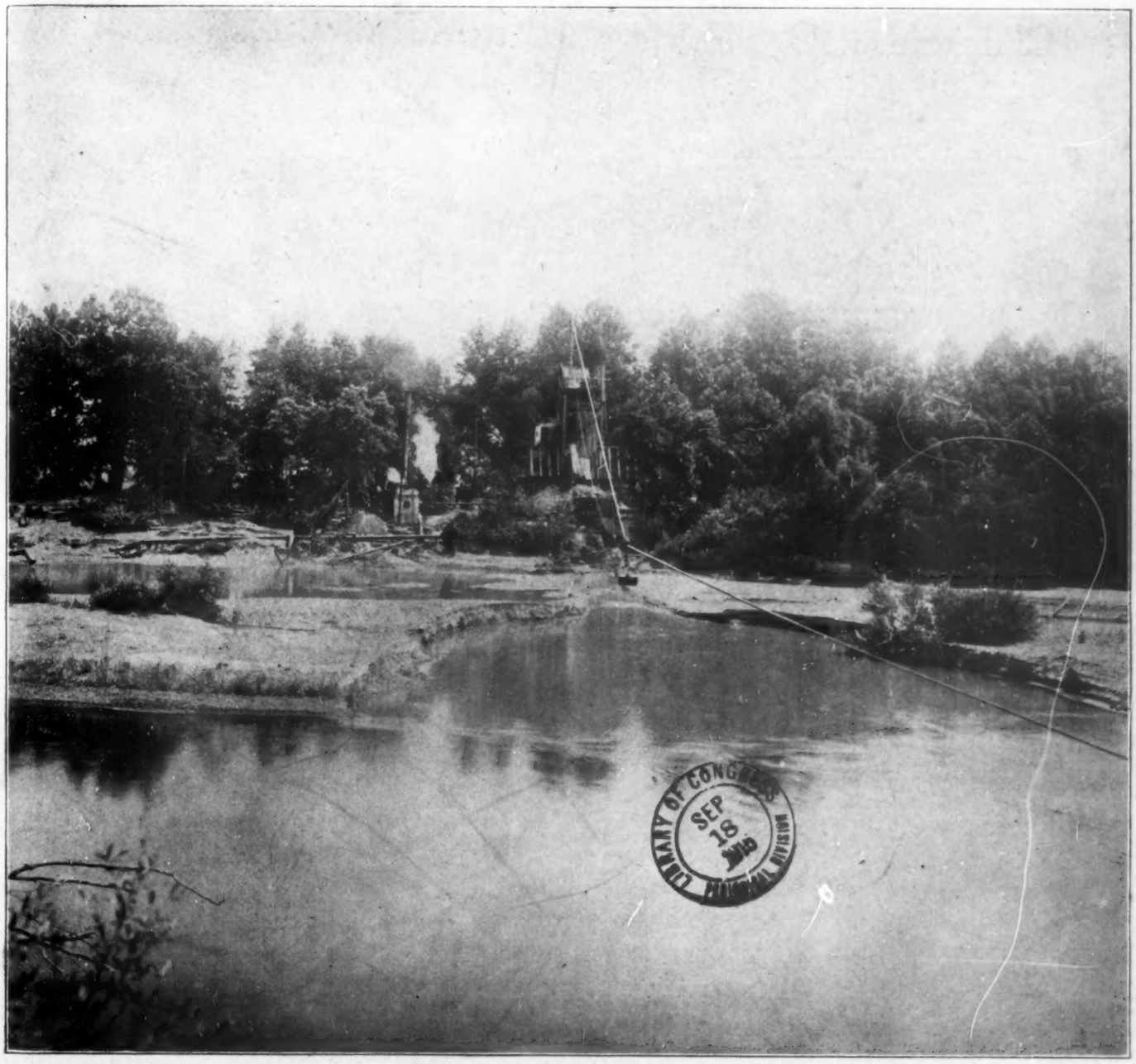
Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

Volume XVI. CHICAGO, ILL., AUGUST, 22, 1915. Number 8



DRAGLINE CABLEWAY EXCAVATOR DIGGING GRAVEL IN THE MERAMEC RIVER

Giant BELT for Your Drives

Granite BELT for Your Elevators

Supremo BELT for Your Conveyors

WHY? ASK US.

Revere Rubber Co.

BOSTON NEW YORK CHICAGO NEW ORLEANS PHILADELPHIA

Clinchfield Portland Cement Corporation

General Office and Mills:

Kingsport, Tenn.

QUALITY and SERVICE

Are the two big factors behind the ever-widening demand for

"CLINCHFIELD" Portland Cement

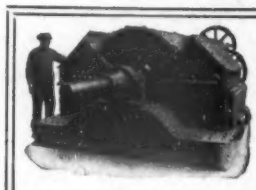
Let us quote you on your next order. "CLINCHFIELD" quality and service will please you.

Sales Offices:

KINGSPORT, TENN.

1305 Union Trust Bldg. CINCINNATI, OHIO

908 Commercial Bank Bldg. CHARLOTTE, N. C.



Patented

"PENNSYLVANIA" Hammer Crushers For Crushing and Pulverizing Lime, Limestone, Gypsum, Marl, Shale, Etc

Main Frame of Steel, "Ball and Socket" Self aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running.

No other hammer Crusher has such a big Safety Factor.

Pennsylvania Crusher Co.

New York PHILADELPHIA Pittsburgh

SAYLOR'S Portland Cement COPLAY CEMENT MANUFACTURING CO. COPLAY, PA.

ESTABLISHED 1866.

Saylor's Portland Cement

First Portland Cement made in America

Used by the United States Government since 1876

COPLAY CEMENT MANUFACTURING CO.

SALES OFFICES:

Fifth Avenue Building, NEW YORK CITY

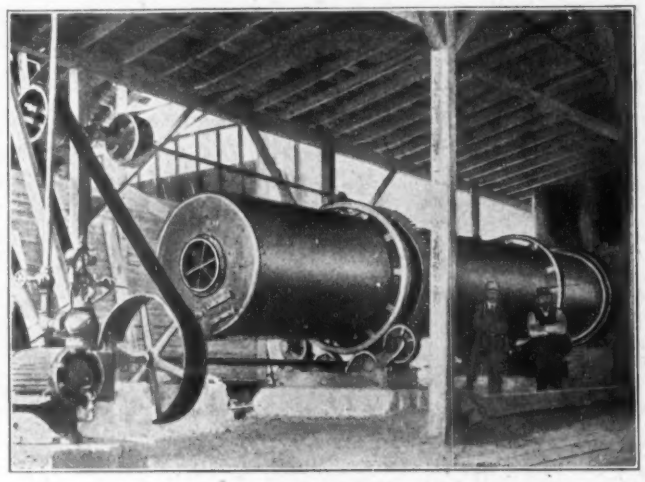
44 Bromfield Street, BOSTON

Land Title Building, PHILADELPHIA

RUGGLES-COLES DRYERS

STATIONARY AND PORTABLE

"Built to Dry at the Lowest Ultimate Cost"



Seven different types of dryers in many sizes and special dryers designed and built to meet unusual conditions. We are now drying 67 kinds of materials, among them sand, rock, gravel, gypsum, coal, clay, etc.

Our many years of experience is at your service

Ruggles-Coles Engineering Co.

CHICAGO OFFICE, McCormick Bldg.

50 Church Street NEW YORK

Daily Capacity 7000 Barrels

ALPENA HURON MICH. HURON PORTLAND CEMENT COMPANY

The Quality Cement of the Middle West

MORE THAN FIFTEEN YEARS OF SATISFACTION

THREE PLANTS: ALPENA — DETROIT — WYANDOTTE

HURON AND WYANDOTTE

Water and Rail Facilities Best Serve the Entire Middle West

EVERY BARREL TESTED AND GUARANTEED. SOLD BY THE BEST DEALERS EVERYWHERE

Main Office: 1525 Ford Bldg., Detroit, Michigan

Daily Capacity 3000 Barrels

WYANDOTTE PORTLAND CEMENT CO. WYANDOTTE, MICH.

The Leading Concrete Cement

"The following will show the accomplishments per day of a White good roads truck in Fayette County, operated alone, with one trailer and with two trailers. I have not figured the depreciation or interest on investment involved, but just intend to show a day's work done by a modern road hauling train.

"Feb. 16. Truck alone. Covered 56 miles; hauled 18 tons. Cost for operation, $6.73. (Gasoline, 18 gal. at 12c; 2 men, $4.25; oil, 32c.) Cost per ton-mile, 6.6 cents.

"Feb. 17. Truck and one trailer. Covered 48 miles; hauled 31½ tons. Cost for operation, $7.61. Cost per ton-mile, 5 cents.

"Feb. 18. Truck and two trailers. Covered 48 miles; hauled 45 tons. Cost for operation, $8.73. Cost per ton-mile, 4 cents.

"You will notice where one trailer was used 13½ tons were delivered for 88 cents, and where the two trailers were used 27 tons were delivered for $2.00. If the last day's hauling had been by teams at $3.50 per day it would have taken 15 teams costing $52.50, as to $8.73 for truck and trailers, making $43.77 for County in one day. The trailers used were Troy truck 4 yard trailers."

From an Address delivered before the Kentucky Highway Engineers at Louisville, Ky., by Mr. Robert W. Davis, County Engineer and Superintendent, Fayette County, Ky.

***The ton mile cost**—that is the only real test of any hauling outfit. The record made by this Troy Trailer outfit at Lexington isn't exceptional at all.*

What's your hauling proposition? Very likely we can show you a still bigger saving. Get catalog 4 R. P.

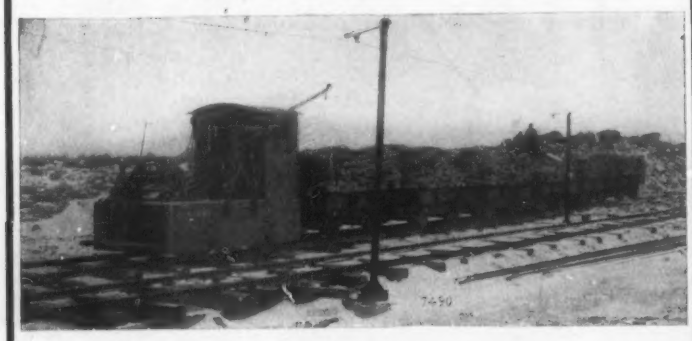
NEW YORK CITY OFFICE
50 Church St., Room 1850
WASHINGTON OFFICE
505 Riggs Bldg.

The Troy Wagon Works Company

Miami County, TROY, OHIO

DETROIT OFFICE
113 First St.
LONDON OFFICE
49 Pall Mall

Each JEFFREY Locomotive Hauls 674 Tons Daily A Distance of One Mile



Six 15-Ton Locomotives are used to haul the limestone from Quarry to Crusher Plant at the plant of the Empire Limestone Co., near Buffalo, N. Y., the distance being one mile, half of which is over 1½% grade.

Though weighing 15 tons each, the locomotives will operate over temporary tracks. Equipped with cable reels which permit them to operate beyond the limit of the trolley wires.

Cost of operation and maintenanance with a Jeffrey Trolley Locomotive is low—consumes no power when not in use—does not require skilled labor to operate. It is "fool proof" and "Always on the Job." Saves the wages of many men and teams.

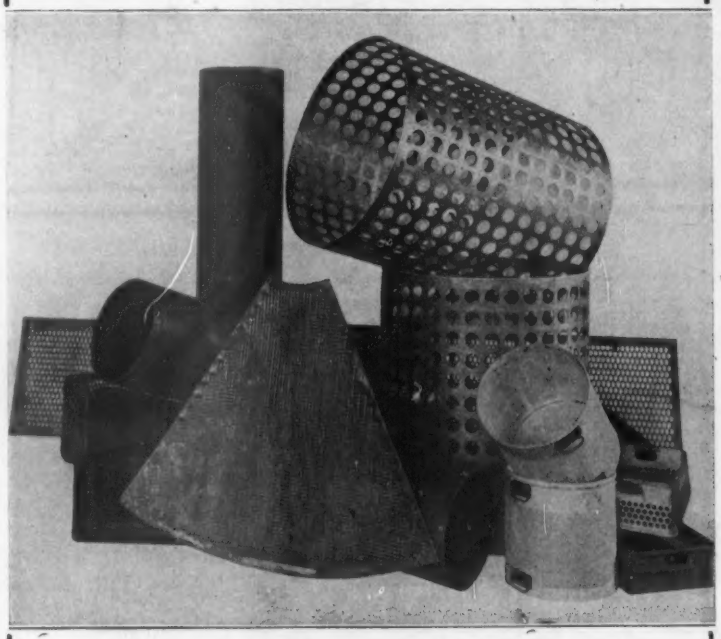
Every Quarry Man will be interested in Bulletin No. 124-35 fully describing this installation. Send for it.

Jeffrey Mfg. Co., 935 N. Fourth St., Columbus, O.

New York Boston Philadelphia Pittsburgh Charleston, W. Va. Chicago Birmingham Denver Montreal

PERFORATED METAL

STEEL SCREENS :: :: IRON AND STEEL WORK



ELEVATOR BUCKETS, STEEL TANKS, ETC.

W. TOEPFER & SONS

ESTABLISHED 1855

183 Broadway Milwaukee, Wis.

What Material Do You Grind

or want to grind to Powder?
How fine do you want to grind it?

Just give us that information, and then let it be "up to us" to demonstrate what, if anything, we can do to save or make money for you with the

RAYMOND PULVERIZING-AIR SEPARATING SYSTEM

It is a literal fact that in many cases a manufacturer's statement to us on these two points has led to a thorough investigation resulting in installations of the Raymond System. And these installations have proven extremely profitable to such manufacturers in **every case.**

In many other instances our investigations have shown that the Raymond System could not be profitably adopted, and we have been quick to say so.

The Raymond System is not a ready-made affair, but is susceptible of great elasticity of application. This is proven by the great variety of materials handled by it.

Wherever the Raymond System is applicable, it produces tremendously profitable results.

It certainly ought to be worth your while to **know** whether we can make money for you or not, when it is so easy for you to make sure.

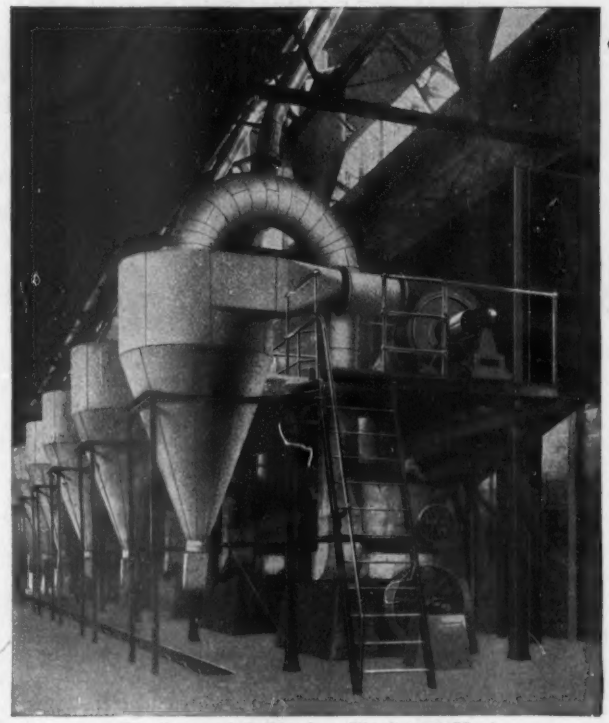
And bear in mind that wherever the Raymond System is installed, the results we promise are absolutely guaranteed.

Just write us your answer to the above questions. It may lead to big profits for you.

Clip out the reminder coupon now, and write us at once.

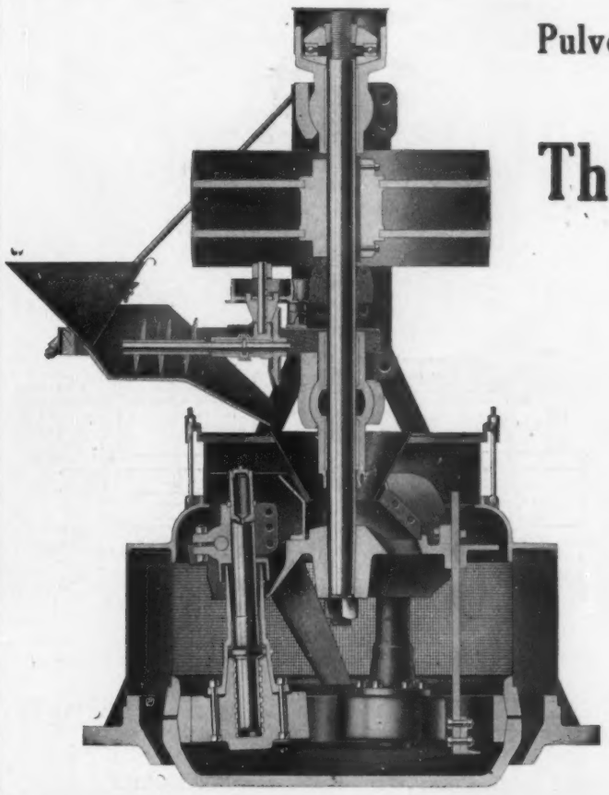
CUT OUT THIS COUPON
As a Reminder to Write

Raymond Bros. Impact Pulverizer Company 1304 North Branch St., Chicago
about the Raymond System of Grinding and Separating



The Raymond System in a Big Cement Plant

We design special machinery and methods for Pulverizing, Grinding, Separating and Conveying all powdered products. We manufacture Automatic Pulverizers, Roller Mills, Vacuum Air Separators, Crushers, Special Exhaust Fans and Dust Collectors. SEND FOR OUR BOOK.



Pulverized Limestone for Agricultural Purposes is Economically Produced by

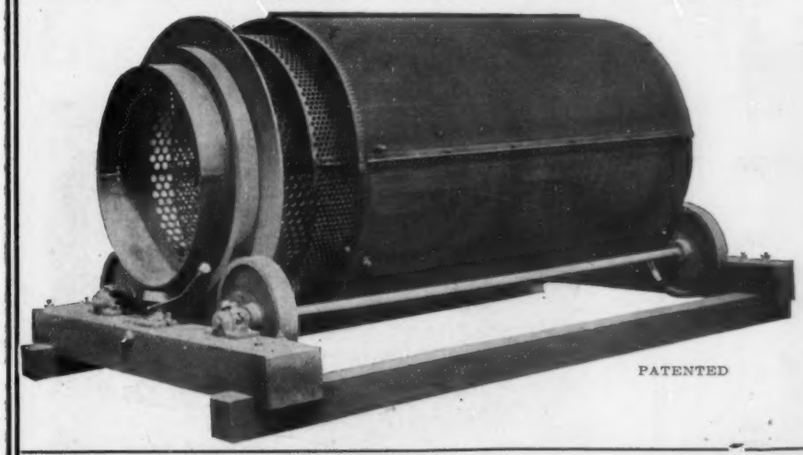
The Bradley Three Roll Mill

It pulverizes raw limestone without drying at the rate of from 5 to 7 tons per hour to the fineness recommended by all agricultural experiment stations, and at such an exceptionally low maintenance cost that no other type of mill should be considered. It is not necessary to screen the material after it leaves the mill, as it cannot leave until it is of proper fineness. This should be considered carefully as it simplifies the installation and reduces cost of maintenance. **Why not investigate.**

MANY MILLS IN SUCCESSFUL OPERATION

Send for Catalog 42 and List of Installations

Bradley Pulverizer Co., Allentown, Pennsylvania



PATENTED

The O'Laughlin Screen

Stands for

LARGE CAPACITY

In Small Space

Write for Description
Used in the Most Modern Plants

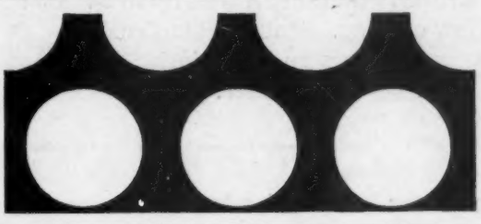
Johnston & Chapman Co.

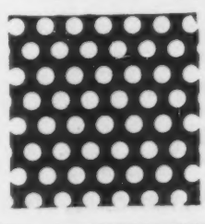
2921 Carroll Avenue CHICAGO

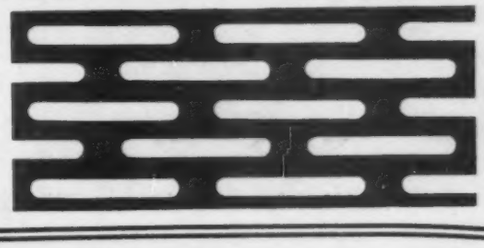
SCREEN SECTIONS for ALL SIZES of REVOLVING SCREENS

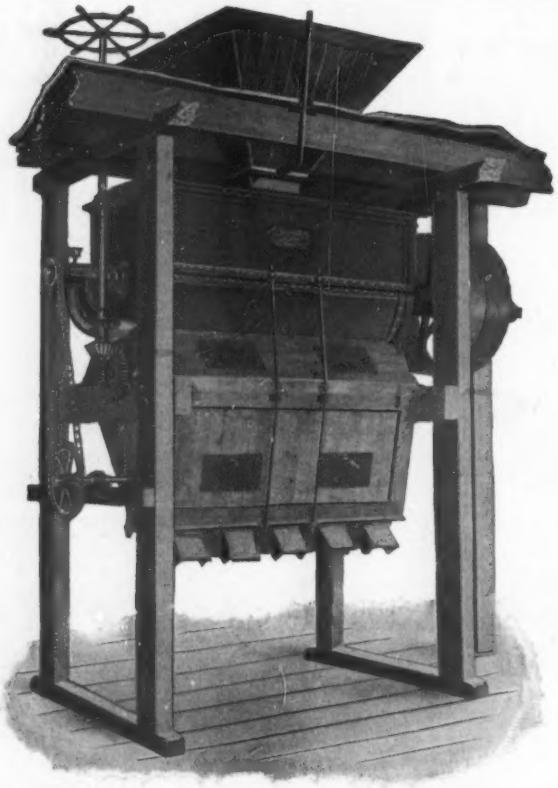
CONICAL SCREEN SHELLS
FOR GRAVEL WASHING PLANTS

Everything in Screens Made Right, for Crushed Stone, Gravel, Sand, Clay, Ore, Etc.

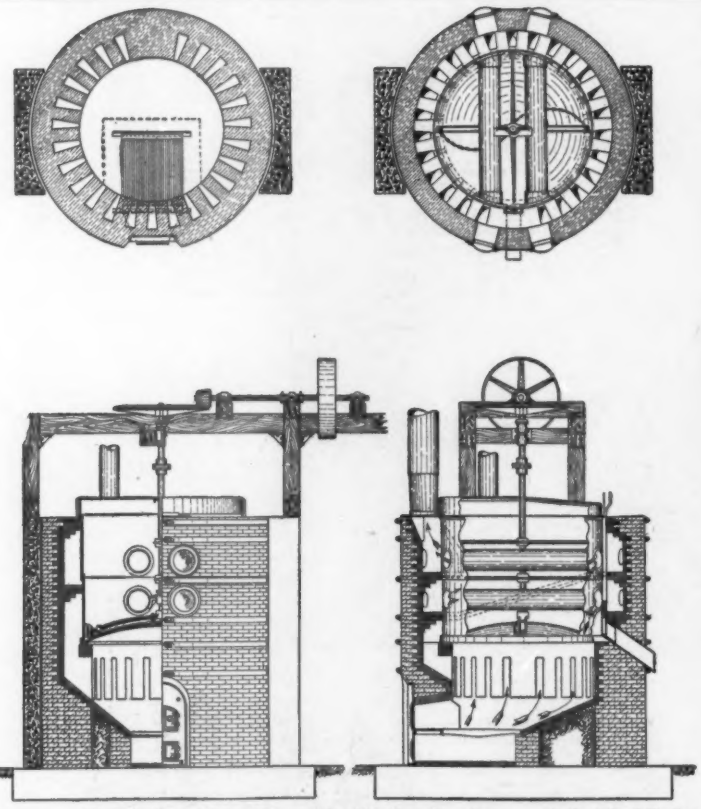




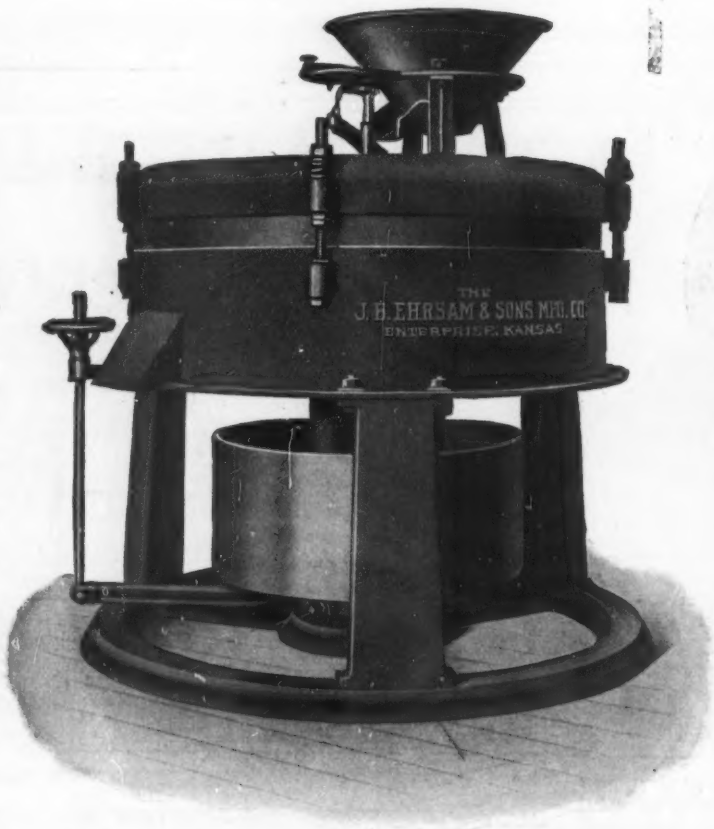




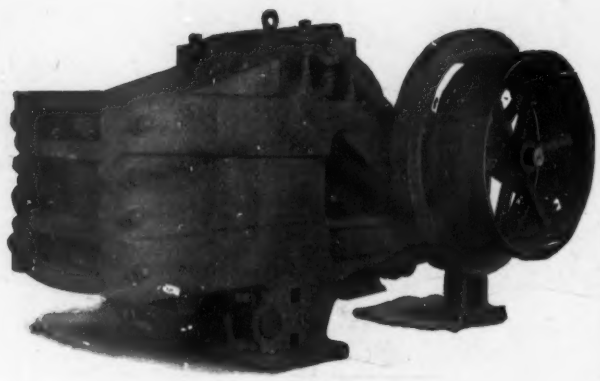
Enterprise Noiseless Mixer



Ehrsam Calcining Kettles—Built in 5 sizes—6-8-10-12-14 feet in diameter, having capacity of from 3 tons to 20 tons to the charge



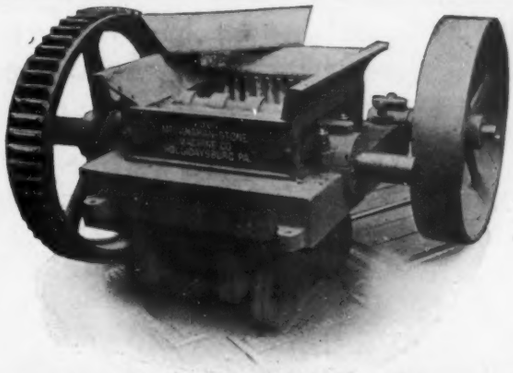
Horizontal and Vertical Heavy Duty Grinding Mills



Jaw Crushers Built in all sizes up to 24″ x 34″ jaw opening. Rotary Fine Crushers in sizes up to 42″ inside diameter.

The J. B. Ehrsam & Sons Mfg. Co., ENTERPRISE, KANSAS

Manufacturers of Plaster Mill Machinery, Conveying, Elevating and Power Transmission Appliances



OUR SINGLE ROLL CRUSHER
IS AS SIMPLE AS CAN BE

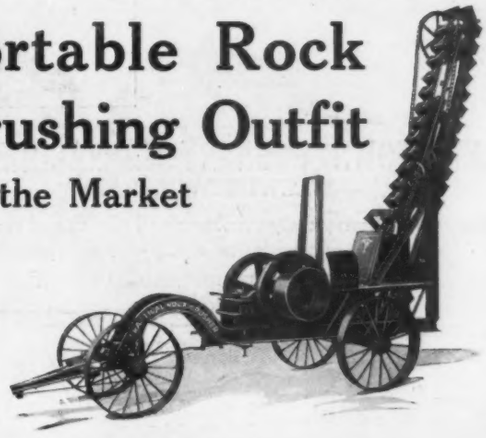
Is easily fed, makes less fines than either a Gyratory or Jaw. Capacity 5 to 500 tons per hour. For crushing Limestone, Dolomite, Hard Rock Phosphate, Cinders, Etc. Screens of all descriptions. Washers for dirty stone.

Ask for Information

McLANAHAN-STONE MACHINE CO., Hollidaysburg, Pa.

BACON \ FARREL
ORE & ROCK
CRUSHING \ WORLD KNOWN
ROLLS-CRUSHERS
EARLE C. BACON, ENGINEER
HAVEMEYER BUILDING, NEW YORK

This Is the Most Efficient
Portable Rock Crushing Outfit
On the Market



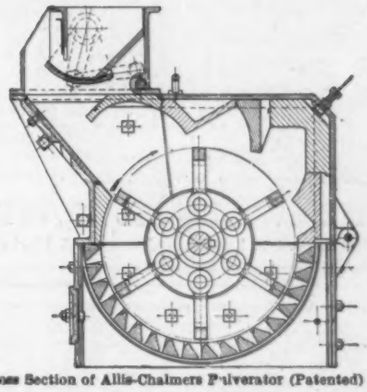
The old troublesome joints of the folding type have been eliminated, and the elevator is all in one section, always ready for use.

CONSTRUCTION—Made entirely of open hearth steel (except fly wheels and pulley). No wood construction. Crusher equipped with jaw plates and liners made of our well-known Hard Iron. Elevator is light but rigid, being constructed of structural iron shapes.

Write for further interesting facts on this outfit

Webb City & Carterville Foundry & Machine Works
Main Office, Webb City, Mo.

Pulverators



Cross Section of Allis-Chalmers Pulverator (Patented)

Pulverizing
by a New Principle

Note that Involute Curve The Direction of Rotation

Advise us your requirements concerning capacity and fineness wanted

Forward Sample of Your Material

Complete Rock Crushing Plants and Cement Mills—Power Plants—Electric Motors

Allis-Chalmers
Manufacturing Company

OFFICES IN ALL PRINCIPAL CITIES

MILWAUKEE, WISCONSIN.

For All Canadian Business Refer to Canadian Allis-Chalmers, Ltd., Toronto, Ont.

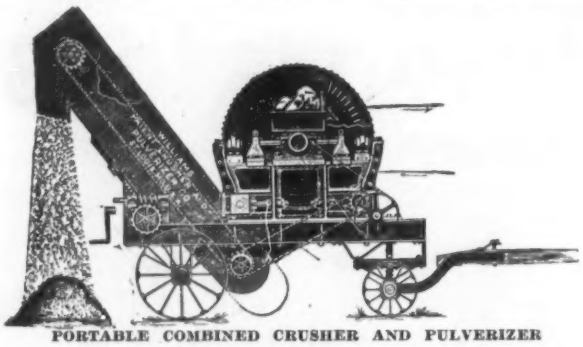
FOREIGN REPRESENTATIVES:—Frank R. Perrot, 883 Hay St., Perth, W. A. Frank R. Perrot, 204 Clarence St., Sydney, N. S. W. Mark R. Lamb, Huerfanos 1157, Casilla 2653, Santiago, Chile. H. I. Keen, 733 Salisbury House, London Wall, E. C., London, England. American Trading Co., Representative in Japan, South America, China and Philippine Islands. Herbert Ainsworth, Johannesburg, So. Africa.

HOISTING rope of every description for elevators, mines, coal hoists, ore hoists, conveyors, derricks and cranes, stump pullers, steam shovels, dredges, skidder rope for logging, ballast, unloading. Towing hawsers, mooring lines, tiller rope, and ship's rigging. Power transmission. Suspension bridge cables. Rope for all haulage purposes. Flattened strand rope. Non-spinning rope. Steel clade rope. Locked coil track cable for aerial tramways. Flat rope.

Special rope made to order to suit any purpose

American Steel & Wire Company

Chicago, New York, Worcester, Cleveland, Pittsburgh, Denver. Export Representative: U. S. Steel Products Co., New York. Pacific Coast Representative: U. S. Steel Products Co., San Francisco, Los Angeles, Portland, Seattle.



PORTABLE COMBINED CRUSHER AND PULVERIZER

The Williams Combined Crusher and Pulverizer. Two Machines in One

This new Williams Combined Crusher and Pulverizer actually does the work of two machines—it will crush and pulverize limestone from cubes 5"x10" to wheat size and finer **IN ONE OPERATION**, producing a product admirably suited

FOR LAND FERTILIZER

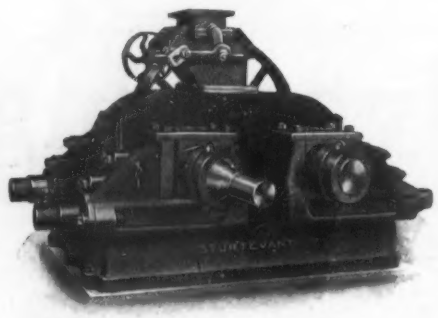
ALL PARTS SUBJECT TO WEAR MADE OF MANGANESE STEEL

Mill No.	Crushing Cylinder	Size Feed	Capacity per hour	Horse Power	Speed	WEIGHT Portable	WEIGHT Stationary
1	30"x24"	5"x10"	2-3 Tons	8 to 10	800 R.P.M.	6000 lbs.	5000 lbs.
2	40"x24"	10"x14"	4 to 5 Tons	15 to 18	600 R.P.M.	7500 lbs.	6500 lbs.

Write for Bulletin R.P.-144 for further information

THE WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY

2705 N. Broadway, ST. LOUIS, MO. 268 Market St., SAN FRANCISCO, CAL. General Sales Dept., Old Colony Bldg., CHICAGO, ILL.



STURTEVANT MACHINERY

CRUSHERS **GRINDERS** **SCREENS**

Thirty Years of Practical Experience has taught us that no one machine is adapted to all purposes. Customers expect correctly designed machines for their special work. Our large line enables one to select properly. It consists of:

CRUSHERS—For coarse, medium and fine work on hard or soft rock. Jaw, Rotary and Hammer design.
CRUSHING ROLLS—Coarse, medium and fine. Hard or soft rock—wet or dry.
RING-ROLL MILLS—For pulverizing hard materials.
EMERY MILLS and HAMMER-BAR MILLS—For pulverizing softer materials.
SCREENS—Inclined Vibrating and Rotary for fine or coarse work—wet or dry.

Sampling Crushers, Rolls, Grinders and Screens. Send for Catalogue.

STURTEVANT MILL CO., Boston, Mass.

NEW YORK CHICAGO DENVER PITTSBURGH VICTORIA, B. C. LONDON, ENG.

THE CLAYTON

High Speed, Self-Oiling

Air Compressors

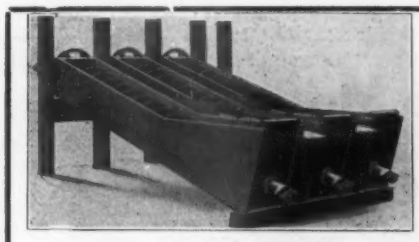
Single, Duplex and Triplex

can be Coupled Direct or Belted to your Electric Motor or other source of power. Simple, Efficient, Convenient and Dependable. Best Machines for Small Pneumatic Tools, Riveters, Air Drills, Cleaning Machinery, Air Hoists, Moulding machine and small Foundry work, and other Machine Shop Service.

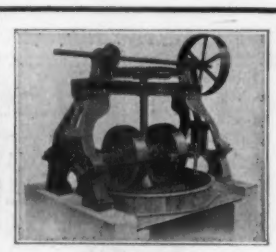
Send for Bulletin C-212-58.

International Steam Pump Co.
Clayton Air Compressor Plant
Works: East Cambridge, Mass.

NEW YORK OFFICE: 115 Broadway. Branch Offices in All Principal Cities
C165.1



Sand Washers



9-Foot Dry Pan

LEWISTOWN FOUNDRY & MACHINE CO.

LEWISTOWN, PA.

Builders of heavy duty crushers and glass sand machinery
Glass sand plants equipped complete

WRITE FOR PRICES AND CATALOG

WHEN YOU ABSOLUTELY KNOW THAT

Ricketson's Mortar Colors

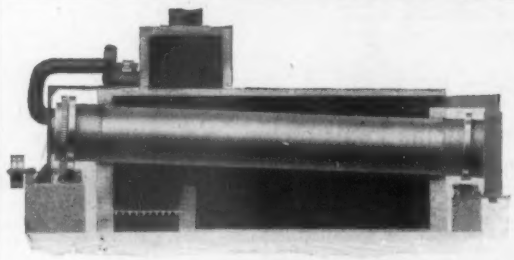
are pure and brilliant in tone, economical in application and a permanent guarantee against fading and washing

Why not INSIST on having them?

They are the acknowledged best for all uses—Mortar, Brick, Cement, Concrete and stone. Red, Brown, Buff, Purple and Black.

RICKETSON'S MORTAR COLORS — YOU CAN'T FADE 'EM

RICKETSON MINERAL PAINT WORKS, MILWAUKEE, WIS.



We make the largest variety of MECHANICAL DRYERS

Write for *Catalog No. 16*

We are also Engineers and Manufacturers of

Car Hauls
Crushers and Pulverizers
Drop Forged Chain
Elevators and Conveyors
Soft Mud Brick Machinery
Feeders
Mining Machinery
Mixing Machinery
Sand Plants
Screens

THE C. O. BARTLETT & SNOW CO., Cleveland, Ohio

AUSTIN GYRATORY CRUSHERS

Made in Eight Sizes

50 to 5000 Tons Per Day

Plans and Specifications submitted and expert advice free on any problems involving rock-crushing or earth-handling.

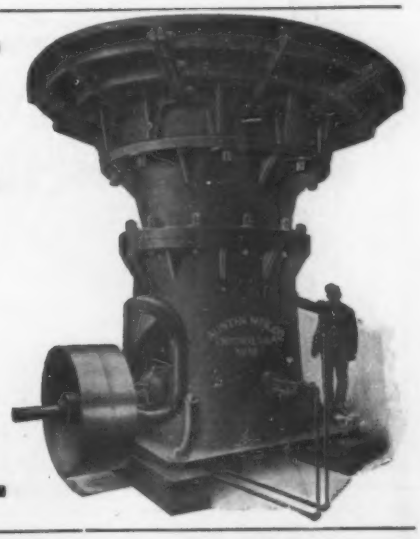
AUSTIN MANUFACTURING CO.

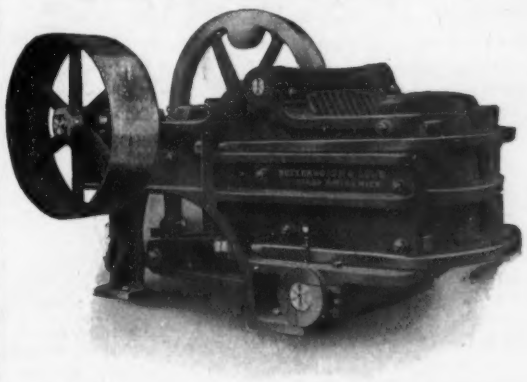
CHICAGO

New York Office: 50 CHURCH STREET

Canadian Agents: MUSSENS, Ltd., Montreal

We manufacture:—Road and Elevating Graders, Scarifiers, Road Rollers, Quarry Cars, Dump Wagons, Stone Spreaders, Street Cleaning Machinery.





Nippers—17 x 19", 18 x 26", 20 x 30", 24 x 36" and 26 x 42"

Jaw and Rotary CRUSHERS

For all Rocks and Ores Softer than Granite

GYPSUM MACHINERY—We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting, etc.

Special Crusher-Grinders for Lime

Butterworth & Lowe

17 Huron Street, Grand Rapids, Mich.

Crackers—6 sizes—many variations.

The Grinding is Finished in one Operation

All working parts can be removed and replaced without disturbing belts, feeder, etc.

BONNOT PULVERIZER

Grinds and Screens Limestone, Raw Lime and Hydrated Lime

Does it at One Operation. Gives You Any Desired Fineness

GRINDING LIME IS LARGELY A SCREENING PROPOSITION. THE BONNOT PULVERIZER HAS THE LARGEST SCREENING SURFACE AND CONSEQUENTLY THE GREATEST CAPACITY.

NO OTHER MACHINE LIKE IT IN THE ACCESSIBILITY OF SCREEN AND GRINDING PARTS.

No. 4 Catalog Explains These Advantages

THE BONNOT COMPANY

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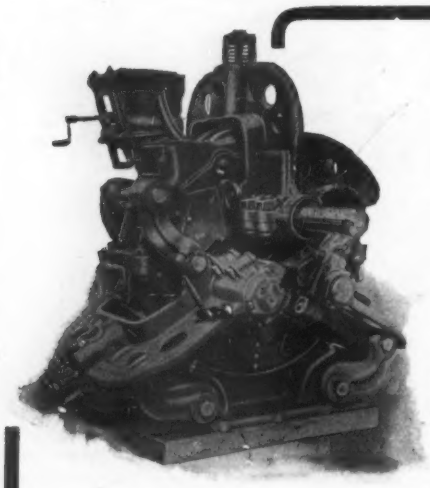
KANSAS CITY, MO.

CANTON, OHIO



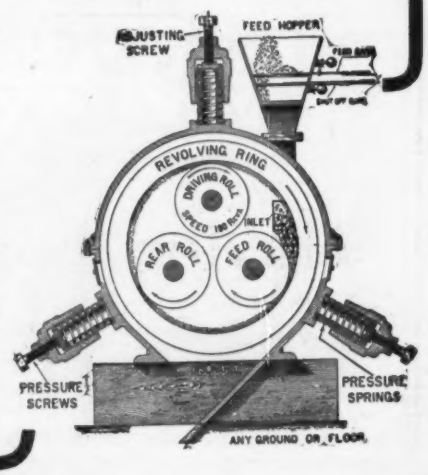
MAXECON

Means MAXimum of ECONomy

Years of experience with the assistance of our hundreds of customers has found THE SOLUTION OF GRINDING HARD MATERIALS. The MAXECON PULVERIZER combines highest EFFICIENCY, greatest DURABILITY and assured RELIABILITY, Uses the LEAST HORSE POWER per capacity. Embodies the features of our Kent Mill with improvements that make it MAXECON.

WE DO NOT CLAIM ALL of the CREDIT for this achievement

We have enjoyed the valuable suggestions of the engineers of the Universal Portland Cement Co. (U. S. Steel Corp.), Sandusky P. C. Co., Chicago Portland C. Co., Marquette Cement Mfg. Co. Western P. C. Co., Cowham Engineering Co., Ironton P. C. Co., Alpena P. C. Co., Castalia P. C. Co., Pennsylvania P. C. Co., and many other patrons.



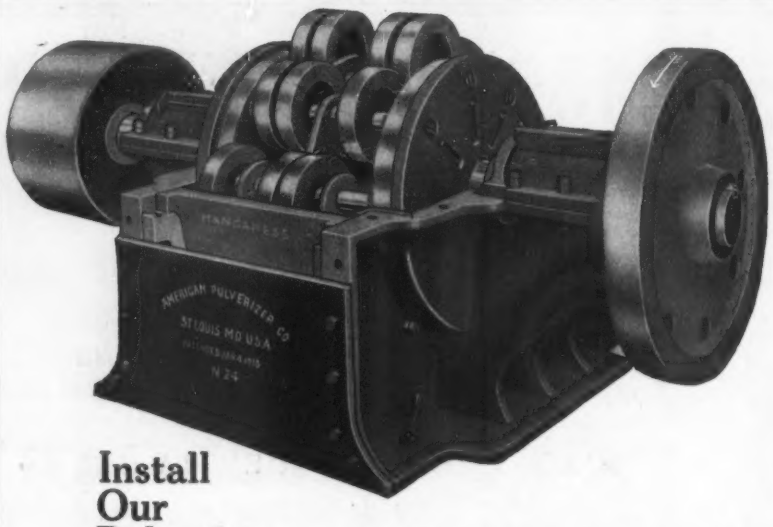
THE RING WOBBLES

The FREE WOBBLING POUNDING RING instantly and Automatically ADAPTS its position to the variations of work.

Its GRINDING ACTION is DIFFERENT than any other; besides the STRAIGHT rolling action of the rolls, the SIDE to SIDE motion of the ring makes the material subject to TWO crushing forces and DOUBLE OUTPUT results.

KENT MILL CO.

10 RAPELYEA ST., BOROUGH OF BROOKLYN, N. Y. CITY
LONDON, W. C., 31 HIGH HOLBORN
BERLIN-HOHENSCHOENHAUSEN



Send for our

Catalog No. 21

Read It

and you will learn it describes the best designed and the best equipped

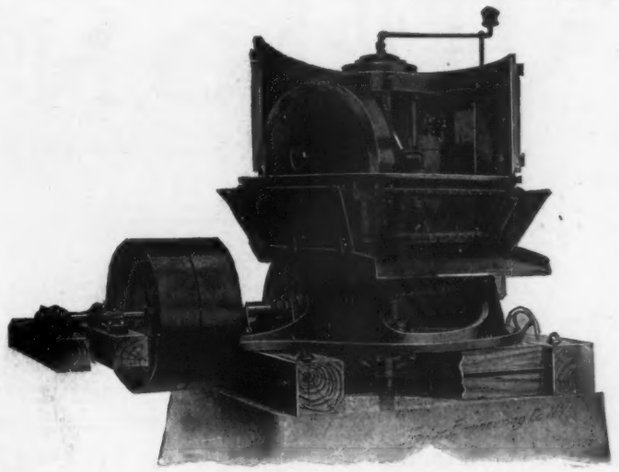
PULVERIZER

Install Our Pulverizer and you will find it capable of doing the hardest work and more of it, with least speed, least power, and least upkeep cost. **Our Guaranty** means the machine must comply, otherwise ship it back; **we pay return freight**

Describe Your Material—Tonnage Per Hour—Screen Fines

Pleased to Answer Questions

AMERICAN PULVERIZER CO., East St. Louis, Ill.



6 FT. DIA. TRAYLOR WET MILL

TRAYLOR
WET GRINDING PAN
or CHILIAN MILL

A strong, rugged grinding pan or mill with improved features insuring high capacity and low power cost. Has screen surface entire circumference allowing quick discharge.

ESPECIALLY DESIGNED FOR THE PREPARATION OF GLASS SAND

WE ALSO BUILD GYRATORY & JAW CRUSHERS, CRUSHING ROLLS, ELEVATORS, SCREENS, DRIERS, ETC.

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ALLENTOWN, PA.

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24 Church Street

EUROPEAN REPRESENTATIVES:
WILFLEY CO., Ltd., London, Eng.

SALT LAKE OFFICE:
Newhouse Building
Salt Lake City, Utah

Feed and Discharge
of
Symons Disc Crushers

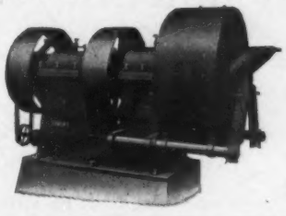
The material fed through the center is spread quickly and uniformly by centrifugal force and is thrown out the instant it is reduced to the proper size.
This feature eliminates

Unnecessary wear of the discs—Waste of power—Clogging and packing at the discharge

And Results In

Uniform wear of the discs. No grooves. Ready discharge and greater capacity. Lower horsepower per ton crushed. The reasons why make us say

EVENTUALLY SYMONS DISCS



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CHALMERS & WILLIAMS

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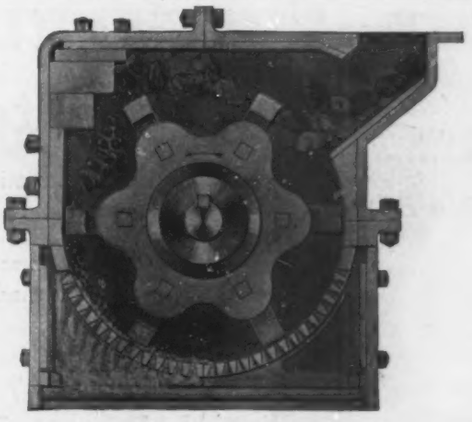
1450 Arnold St., Chicago Heights, Ill.



K-B PULVERIZER
ALL STEEL

Manganese Steel Linings, Adjustable Hammers, Readily Removable Screens

Large Capacity
Low Power

Economical
Efficient

Designed for Service and Durability

Write for Bulletin Today

K-B Pulverizer Company, Inc.
86 Worth St., New York City

BANNER HYDRATE LIME

Carries more sand for Mason Work, than any other lime on the market

FOR INFORMATION APPLY TO THE

NATIONAL MORTAR & SUPPLY COMPANY

A. H. Lauman, *President* PITTSBURGH, PA.

IF IT IS
LIME
WE MAKE IT
(STRONGEST IN OHIO)

BULK and Barreled -::- "MASON'S HYDRATE"—For Brick-work, plastering and masonry. -::- "LIME FLOUR"—Hydrated Finishing Lime—Best on the Market. -::- "CLOVER GROWER" —Land restorer, for the farmer—none better. -::- "CARBO HYDRATE"—Soil sweetener—crop producer. -::- Prompt shipments. -::- A dealer wanted in every town. -::- WRITE OR PHONE FOR PRICES.

The Scioto Lime and Stone Co.
Delaware, Ohio

"Lion Brand" and "Cream of Lime" Hydrate

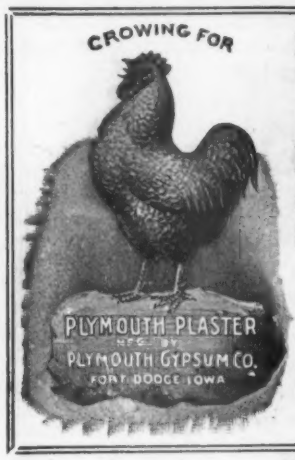
Used in the construction of this building.

There is a good reason for specifying these brands for sky scrapers.

Quality Is Required

If the best is wanted order these brands from The Ohio & Western Lime Company, office at Huntington, Indiana.

First National Bank, Pittsburgh, Pa.



PLYMOUTH PLASTER
WOOD FIBER PLASTER
PLYMOUTH FIREPROOF PARTITION BLOCKS
SACKETT PLASTER BOARD
STEEL STUDDING

THE QUALITY BRANDS

WRITE US FOR PRICES AND ADVERTISING MATTER

Plymouth Gypsum Co.
Fort Dodge, Iowa

Red, Brown, Buff and Black MORTAR COLORS

CHATTANOOGA PAINT CO. MORTAR ECLIPSE COLORS CHATTANOOGA, TENN.

CHATTANOOGA PAINT CO. STANDARD LOWES PAINT. CHATTANOOGA, TENN.

The Strongest and Most Economical on the Market.

Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

CHATTANOOGA PAINT CO.
Chattanooga, Tennessee

TIGER BRAND
HYDRATED LIME

Workmen Like Tiger Brand—

BUILDING material sells easier and gives better satisfaction when the workmen who use it are boosters for it.

Tiger Brand White Rock Finish (Hydrated Lime) spreads easily and does not roll or work short under the trowel. The plasterer's helper cannot spoil the job by poor slaking because the slaking is already done.

The men with the trowel will boost for you if you sell Tiger Brand.

The Kelley Island Lime & Transport Co.
Cleveland, Ohio

MONARCH
HYDRATED LIME

This is what you want in Hydrated Lime, Mr. Dealer

Lime that is perfectly slaked, of extreme fineness, that is positively guaranteed not to "pop."

Monarch Hydrated Lime is of absolute uniformity, no underburned or overburned lime to be eliminated.

It's a pleasure to dealers to recommend this well known Brand. It means more business, more calls for Monarch Brand, More Profit for you.

Monarch publicity service is a new aid to you in selling and creating a call for Monarch Hydrated Lime. Be a Monarch Man. Write us today.

National Lime & Stone Co.
CAREY, OHIO

"If a man expects to succeed in the lime business and he puts a hydrate on the market, it is only good business for him to put the best hydrate in his branded bag that he can possibly manufacture."

—Rock Products, May 22, 1915.

Mitchell Hydrated Lime

is made under the supervision of a chemist who analyzes the product at frequent intervals during the day to insure a uniform high grade material.

Mitchell Hydrated Lime

in concrete, insures greater strength and lasting qualities. It reduces the possibility of segregation to a minimum. It makes a fat, viscous mortar that adheres to each piece of the coarser aggregate, insuring a uniform impermeable mass. This adds strength to the concrete and gives it the density that makes it waterproof.

MITCHELL LIME CO.
Mitchell **Indiana**

HYDRATED LIME

Its Marvelous Increase In Consumption

KRITZER CONTINUOUS PROCESS

The Kritzer Service

Any lime can be successfully hydrated by our process; but whether your lime can be hydrated and successfully marketed is another question. We study your proposition and the possibilities of its commercial success, and advise you accordingly. Our ten years' experience in the business is a valuable assistance in this. Ours is not a mail order proposition. We investigate our customers' proposed plant thoroughly before we will enter into a contract with them. We turn down more prospects than we advise to go into the business. We can't afford to have any failures. Our customers' success is our success.

WRITE TO US

Are You Meeting the Increasing Demand for Hydrated Lime?

There is nothing forced or unnatural about the growing popularity of this product. It is a natural growth resulting from a widespread awakening to the advantages of Hydrated Lime for a variety of uses—as waterproofing for Concrete, in wall plaster, and in almost every case where lime is called for. In hydrated form it is weatherproof, more easily handled, and better adapted to modern methods, both of commerce and construction. A continued growth of the demand may therefore be expected.

The Kritzer Way

insures a product which will hold a continued place for itself on the market. We install plants complete, designed by our own expert engineers to meet your local conditions and turn out a uniform grade of Hydrated Lime of the highest standard, and with the greatest economy in cost of production. The Kritzer Continuous Hydrator, and the accessories installed with it, are the recognized standards in this line.

THE KRITZER COMPANY Chicago, Ill.

Our Motto for Years Has Been---

Quality and Service

Send Your Orders on That Basis **PRICE ALWAYS RIGHT**

Eastern Plant
PORT CLINTON
OHIO

NATIONAL RETARDER

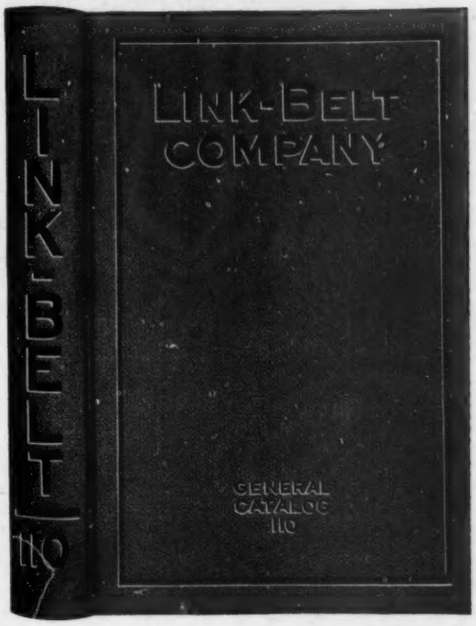
Western Plant
WEBSTER CITY
IOWA

THE NATIONAL RETARDER COMPANY

930 North Halsted Street, CHICAGO, ILL.

This New Link-Belt Catalog No. 110

is the most complete ready-reference book ever published on elevating, conveying and power transmission machinery



A Book of Practical Labor-Saving Ideas for Men in All Industries

SUMMARY OF CONTENTS

Chains and Sprocket Wheels, for Elevators, Conveyors and Drives.
Power Transmission Machinery, including Bearings, Hangers, Pulleys, Gearing and Clutches.
Take-ups and Elevator Boots.
Elevator Buckets, details of all standard types of Elevators.
Chain, Screw and Belt Conveyors.
Conveyor and Bin Discharge Gates.
The Peck Carrier for Coal, Ashes, Stone, etc.
Standard types of Coal and Ashes Handling Machinery and Accessories.
Feeders, Hoppers, Chutes, Crushers, Screens, Eccentrics.
Coal Tipples, Washeries, Centrifugal Driers.
Coal Chutes, Pockets, Coaling Stations.
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Bridge Tramways.
Freight and Package Handling Machinery.
Sugar Handling Machinery.
Industrial Cars, Turntables.
Ice Handling Equipment.
Engineering Information.

576 Pages. Cloth Bound. Supersedes All Previous Issues

Address Request for the Book on Your Business Stationery. Sent Gratis.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

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Boston.....49 Federal St.
St. Louis.....Central Nat'l Bk. Bldg.
Buffalo.....698 Ellicott Sq.
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Detroit.....911 Dime Bk. Bldg.
Cleveland.....1304 Rockefeller Bldg.
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Portland, Ore.....14th and Lovejoy Sts.
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New Orleans.....Whitney Supply Co.
San Francisco.....N. D. Phelps
Birmingham.....General Machy. Co.
Brantford, Can..Waterous Eng. Wks. Co.
Minneapolis.....Link-Belt Supply Co.
Knoxville, Tenn.....D. T. Blakely

It makes no difference

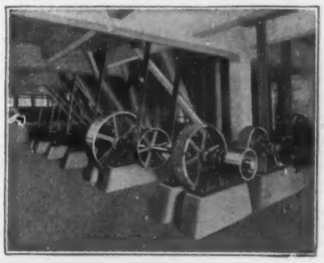
whether you want to screen your material, elevate, store or convey it, or transmit power to various units

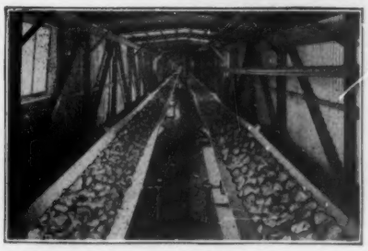
When you want any such equipment there is just one place to send your orders and more Stone and Gravel Producers are finding it out every day.

They may be fooled once in a while, but when they keep sending repeat orders time after time, it proves that you are treating them right.

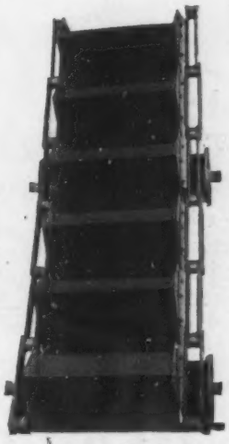
SPECIFY WELLER-MADE INSIST ON

Complete Power Transmission Equipments of all kinds.

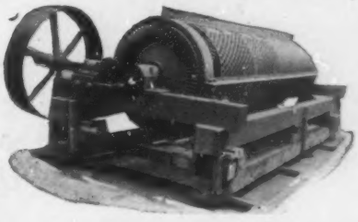




Belt Conveyors for any material. 10″ to 60″ wide.

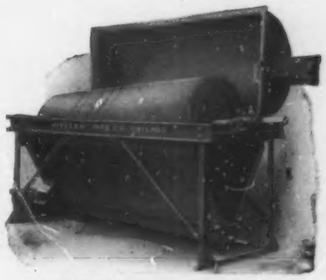


Heavy Bucket Elevators up to 84″ wide and 36″ pitch.

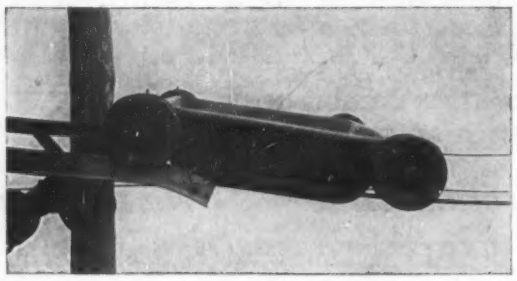


Revolving Screens of every type for every purpose.

Special enclosed Screens for dusty or fine materials.



WELLER MFG. CO. Send for General Catalog P. 20 CHICAGO



WHAT WE DO IT WITH

Does It Pay to Haul Dead Load?

Although clearly set forth in Bulletin B we find the following point needs the emphasis of a special advertisement.

In the old type of tramway with underhung buckets the dead weight of the buckets alone is usually about equal to the live weight transported. But there are as many buckets returning empty as are going out loaded; hence there is twice as much dead weight being moved at any moment **in the cars alone** exclusive of hauling cable, as there is useful live weight. Each Lawson car on the other hand will transport a live load about six times its own dead weight. Allowing for the empties returning, this means that there is three times as much live weight moving at any moment as there is dead weight to carry it.

Put in another form this means that in the bucket tramways the dead load is **double the live load,** and in the Lawson tramway is **one-half the live load**—a ratio in favor of the Lawson transportation of 4 to 1. Moreover, this dead load, like "the poor, we have always with us," whether the tramway is running to capacity or not.

This is a bad matter, but worse remains, since the weight of the haul rope itself is usually twice as great for a bucket tramway as for the Lawson Tramway—and this again is non-paying dead load. All the above bears directly on the earning capacity. An amplification of this subject can be found in our Bulletin B under the heading of POWER REQUIRED.

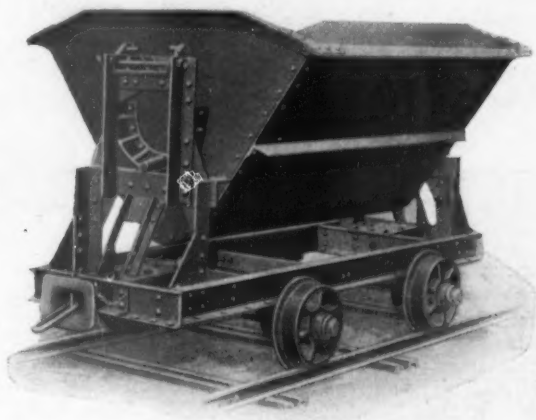
Respectfully submitted,

AMBURSEN COMPANY (Tramway Department) 61 Broadway, New York

The Economy of "Built to Last" Equipment

The "Lakewood" Clam Shell Bucket is a powerful and durable bucket that has far greater working capacity than any other bucket, regardless of type. The "Lakewood" Quarry Cars are manufactured in all sizes and types—and strongly designed for the **particular** service desired.

"The Lakewood Line
—BUILT TO LAST"



The Company wishes the trade to call upon the Consultation Service of our Engineering Department for suggestions as to design and installation of equipment. We will give you the benefit of our 18 years' experience and furnish specific information as to what Lakewood Buckets and Cars are doing under conditions similar to yours.

Lakewood Engineering Co.
CLEVELAND OHIO

Dragline Cableway Excavators

SHEARER & MAYER & SAUERMAN PATENTS

Dig, convey, elevate and dump in one continuous operation, from wet or dry pit, to bins, screens, cars or storage piles. Operated with a double drum friction hoist. Buckets are designed to dump at either end of track cable and are under positive control of one operator.

Write us your conditions and requirements and we will advise you if our equipment is adaptable.

Sauerman Brothers, Engineers

1140 Monadnock Block CHICAGO, ILLINOIS

THE LEADER IS THE NEGLEY

DRAGLINE SLACK CABLEWAY EXCAVATOR

FOR ALL OPERATIONS

DISCHARGES FAST OR SLOW AS DESIRED AT THE MAST OR ANCHOR

INVESTIGATE THE SUPERIOR VIRTUES

BEFORE BUYING

IN OPERATION & MAINTENANCE COST

IT IS THE MOST ECONOMICAL

Indianapolis Cable Excavator Co. INDIANAPOLIS, IND. Beauty Av. & New York St.

LELAND EQUIPMENT CO., San Francisco, Cal.
CHAS. T. TOPPING MACHINERY CO., Pittsburgh, Pa.
H. K. ROBINSON, St. Louis, Mo. W. A. BROWNING, Dallas, Tex.
LECKY & COLLIS, Ltd. Montreal Toronto Napanee
WESTERN SUPPLY & EQUIPMENT CO., Ltd.
Edmonton Calgary Lethbridge

Don't Let Lump Lime Drop

Tilt the

Long Reach MANIERRE Loader

as in the picture. It lowers and raises with the pile. That is why it does not break the product that it loads.

Bulletin 419 tells more.

Manierre Engineering & Machinery Co.

Milwaukee, Wisconsin

The Hardest Job—The Easiest Way

Digging into trap rock has always been slow work—a back-breaking job, and very costly. Now note what a

Haiss Wagon Loader

(Patented)

can do. It digs this material and delivers it into a truck at a speed of 1 cubic yard per minute for a cost of less than 1 cent per cubic yard for electric or gasoline power. Of truck loading methods no choice is left after the efficiency of this loader has been witnessed. Write for cost data, and the details of this machine's powerful construction.

The Geo. Haiss Mfg. Co., Inc.

146th St. and Rider Ave. - - NEW YORK CITY

Clyde Hydrator with Hood

"The common sense way"

SIMPLICITY IS THE KEYNOTE OF SUCCESS

IT does not take a "master mind" to install a CLYDE Hydrating plant, nor does it take a "high priced" engineer to run one. If **YOU,** Mr. Lime Manufacturer, realized how simple it is to obtain a PERFECT HYDRATE, with the CLYDE HYDRATOR you would place your order with us by FIRST MAIL. Write us today—NOW, and let us explain to you what CLYDE PROCESS hydrated lime is and how to obtain the best results, then

Use your own judgment—it's up to you

H. MISCAMPBELL, Duluth, Minn.

Patentee and Sole Manufacturer

"A WORD TO THE WISE"

MEDUSA-IZE

"IT'S PURE WHITE"

You Should Use Medusa White Because It Is

1. Pure white in color.
2. Non-staining.
3. A true Portland in every respect.
4. Specified by eminent architects.
5. Used by U. S. and foreign governments.

The artistic possibilities of Medusa White are unlimited. Shipments are being made to all parts of the world. If your building material dealer does not handle Medusa, write us.

Request Catalog and Free Sample

Sandusky Portland Cement Co.
Engineers' Building, Cleveland, Ohio

DIRECT HEAT

DRYERS

FOR

Bank Sand, Glass Sand, Rock, Clay, Coal, Etc.

All Mineral, Animal and Vegetable Matter

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue

—S. C.—

American Process Co.
68 William St., NEW YORK CITY

THE IMPROVED EQUIPMENT CO.
60 Wall Street, New York City
COMBUSTION ENGINEERS
DESIGNERS AND BUILDERS OF
COMPLETE GAS PLANTS — GAS BENCHES
LIME BURNING PLANTS — GAS PRODUCERS
SPECIAL INDUSTRIAL FURNACES

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER
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INSPECTION CEMENT & REINFORCING STEEL
CHEMICAL AND PHYSICAL TESTING
Office and Laboratories
Chicago, New York, Pittsburgh, St. Louis, London
Montreal, San Francisco, Toronto, Mexico City, Seattle

Lime Kilns
Hydrated Lime Plants
Portland Cement Plants

RICHARD K. MEADE
Chemical, Mechanical and Industrial Engineer
202 N. Calvert Street, BALTIMORE, MD.
Cement Tests, Chemical Analyses
Reports on Mineral Properties

"HENDRICK"
PERFORATED STEEL SCREENS AND ELEVATOR BUCKETS
—STAND THE TEST—
Let us figure on your requirements.
HENDRICK MFG. CO.
New York Office, 30 Church St. CARBONDALE, PA.

F. L. SMIDTH & CO. 50 Church St. NEW YORK
SPECIALISTS IN
Engineering Cement Works
AND
Cement Making Machinery

THE FULLER ENGINEERING CO.
Designing, Constructing and Operating Engineers
ANALYTICAL CHEMISTS
Cement, Hydrated Lime and Gypsum Plants a Specialty
OFFICES: Allentown Natl. Bank Bldg. - - ALLENTOWN, PA.

REPORTS DESIGNS ERECTION
Stone Crushing Plants
Sand and Gravel Plants
Quarry Operations
PRESTON K. YATES, Consulting Engineer SHELDON S. YATES Associate
120 BROADWAY, NEW YORK CITY

AUG 23 1915

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Rock Products and BUILDING MATERIALS

INCORPORATING DEALERS BUILDING MATERIAL RECORD

Volume XVI. **CHICAGO, August 22, 1915.** **Number 8**

PUBLISHED SEMI-MONTHLY.

DEVOTED TO

Quarry Products, Cement, Lime, Plaster, Sand and Gravel, Clay Products and Building Specialties—Fireproof Building and Road Construction.

THE FRANCIS PUBLISHING COMPANY.

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Seventh Floor, Ellsworth Bldg., 537 So. Dearborn St., Chicago, Ill., U. S. A.
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EDITORS:

EDGAR H. DEFEBAUGH. FRED K. IRVINE.

GEORGE A. OLSEN, Editor Retailers' Section. F. G. PULLEY, Associate Editor.
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Concrete Wall Saves Galveston.

Reports from the Southeastern section of the state of Texas reaching the public on Tuesday and Wednesday told of the awful damage wrought by the tropical hurricane and commented on the fact that the damage done to Galveston was almost entirely caused by the wind which was blowing at a rate of more than 90 miles an hour. Even while the city was isolated from the rest of the world and floods were causing the death of hundreds and the destruction of millions of dollars worth of property, impressions were prevalent throughout the entire country that Galveston was suffering little from the raging waters. The concrete seawall saved the city from inundation.

Again the advisability of protecting humanity and property in a practical manner has been demonstrated, and cities and communities located in places where overflowing rivers and terrific gulf and ocean waters are liable to rise in their fury have once more had presented to them the necessity of using concrete liberally in the construction of protecting walls.

The annual destruction by water in the United States results in the unnecessary loss of many lives and much property. This destruction can be averted, but it usually takes some catastrophe such as that which has recently visited Texas to awaken mankind to the necessity of providing protection for himself and other animate beings as well as inanimate things of value. Until Galveston protected its citizens by the erection of its seawall, its populace had reason to fear gulf storms which frequently rage with unabated fierceness in the vicinity of that city. Today she feels safe, and her trust is placed in her concrete wall. There was more than cement, stone, sand and water going into the mixer during the construction of that wall—there was the undying faith of the thousands of men and women who had studied conditions in the city where they chose to make their homes. As they watched the work progress, as they saw the forms placed and filled with grout, they felt the protecting arms of enduring concrete being thrown about them. They realized that at last they and their posterity were to be saved from what had always appeared to them as a decision from which they could not escape.

What Galveston has done other cities should do. What Galveston has done other cities must do. Why delay? The opportunity for broad-minded men to come to the rescue of their cities and thereby earn the undying praise of their neighbors is at hand.

Crop Reports Brighten Building Prospects.

While building reports for the month of July show in practically every center a decrease ranging from five to 15 percent when compared with the corresponding period of last year, statements by building commissioners since the government figures on crop production have been made public indicate that the month of August will take from the architects' boards and place in the hands of contractors plans for building construction which have long been delayed.

Prospects at the present time for good fall business are especially bright in the corn and grain producing states. When crops are good, a season of active building is bound to follow. Not only does city building receive an impetus from satisfactory government reports, but farmers—the men who raise and sell the grain and naturally receive the money—become more liberal and plan the erection of buildings and other farm improvements. These improvements naturally call for an increased use of building materials.

With this demand in sight it behooves the building material builder to lay in stocks so as to be prepared for the rush of orders. Coincident with the harvesting of crops, there is a strong demand for freight cars to move these products of the soil. Naturally, a shortage results wherever cars are desired for the transportation of such commodities as building materials. The wise dealer will order his materials as early as possible and give the manufacturer ample time in which to deliver them. The cars are moving rapidly to the Northwest and, before the shortage is actually felt, transportation facilities should be made use of.

Courts and the Labor Problem.

The utter incompetency of our courts, and judicial procedure generally, of being understood by the offenders in labor disturbances is one of the most annoying and unsatisfactory features. Often the majority of the offenders know not a single word of the English language, and so do not comprehend the evidence or the arguments. They only know that they get off free, and consider that as wholesale public endorsement. What is wanted is a systematic application of power to deal with the labor problem upon the actual basis as found in the work shop and the mine, and not to deal as we now have it with a theoretical set of conditions which do not apply in any way to a country like ours, in which the working classes are made up of every nationality, speaking every kind of language, and having every kind of antecedents that the world has ever known.

WITH YOU and ME

The Kirkpatrick Sand & Gravel Co., Birmingham, Ala., has recently installed a branch office in the Builders' Exchange, Memphis, Tenn.

J. H. Lendi, formerly assistant to A. G. Carlson, mechanical engineer Universal Portland Cement Co., has been given the title of electrical engineer in the engineering department of that company.

Louis Manegold, treasurer of the Manegold Stone Co., of Milwaukee, and a prominent business man of that city, has been appointed by Gov. E. L. Philipp as a member of the central board of trustees for Milwaukee county institutions.

Henry G. Lehrbach, C. E., has been added to the engineering staff of the Dunn Wire-Cut-Lug Brick Co., of Conneaut, Ohio. His headquarters will be at Atlanta, Ga., and most of his work will be in the south.

One of the latest readers of ROCK PRODUCTS AND BUILDING MATERIALS to enlist in active service in the European war is John Renwick of Caledonia, Ont. For the immediate future he plans to forget entirely about business matters and to give the best of his service to his mother country.

American Builders' Week at the Panama-Pacific Exposition promises to be the largest affair the builders ever held. The General Contractors' Association of San Francisco is making elaborate preparations for entertaining guests and those contemplating the trip should arrange to be in San Francisco during the week of Oct. 18-25.

Henry Cowell Lime & Cement Co., of San Francisco, Cal., are distributing exposition programs and calendars of daily events to friends of the company who are attending the Fair. The information is contained in a neat little 16-page booklet, vest pocket size.

E. V. Johnson, who for many years has been a conspicuous figure in fire-proofing interests, announces that he has severed his connections with the National Fire Proofing Co., of which he was vice-president and western manager, and will in the future operate independently, with headquarters in Chicago.

The corporate name of the Marion-Osgood Co., Marion, Ohio, has been changed to The Osgood Co. For some time the trade name "Osgood" has been used on shovels, dredges and other excavating machinery and the elimination of the word "Marion" was made so that the name of the company would conform to the trade name.

The outing of the Cincinnati Brick Club, to be given on Aug. 28, at which the brick men will entertain the various members of the building trades with a trip on the Ohio river, bids fair to be one of the most enjoyable occasions of the sort which has been held this summer. The committee in charge sent out several hundred invitations last week, and indications are that few will be "regretted." Details of the entertainment which has been prepared are being closely guarded, the sole specific information being contained in the warning, "Don't stop for lunch—there'll be plenty to eat."

The vacation period is on in Louisville, Ky., Allen R. Carter, vice-president and general manager of the Union Cement & Lime Co., recently left the city for a vacation to be spent at Wequetonsing, Mich. A few months ago Mr. Carter took up the pastime of golf, and has rapidly come to the front as one of the able golfers of Louisville. C. M. Timmons, sales manager of the Kosmos Portland Cement Co., is on a trip east, from which he will return about the last of the month. Several nice orders have been received by the company lately, but the real large contracts are a little slow in breaking. High water in the Ohio and other streams has held the company back considerably in making deliveries this season. Harry Warren, of Warren Brothers, dealers in building supplies and contractors' materials and equipment, recently returned from a three weeks' trip to Detroit, Mich. Guy S. Warren is spending two weeks at Seabright, N. J., and will return about Sept. 1. L. M. Rice, president of the Central Paint & Roofing Co., recently left Louisville for a short vacation to be spent at Bowling Green, Ky. However, business got so heavy at the office that he was recalled before being away more than a few days. Business has been excellent all summer and the season is the best the company has ever had. Mr. Rice said that he thought the advances in iron this season had been largely responsible for the big demand for prepared roofings.

Owing to the fact that they could not accommodate all of those who wished to have exhibits, the Minneapolis Builders' Exchange has been compelled for the second time within six months to enlarge its quarters. The entire front row of offices on the fourth floor of the Warner building have been leased, and a large adjoining room is being fitted up for the general assembly room of the exchange. Some of the handsomest exhibits in the show room have been placed within the last few months.

Scheduled Meetings.

Aug. 21—New York State Builders' Supply Association, summer outing, Manitou Beach, near Rochester, N. Y.

Aug. 27—Del-Mar-Col Building Material Dealers' Association, Atlantic City, N. J.

Sept. 13—Tri-State Roads Association, third annual convention, San Francisco, Cal. (Meeting to be merged with the Pan-American Road Congress.)

Sept. 13-17—American Road Builders' Association, American Highway Association, Pan-American Road Congress, Oakland, Cal.

Sept. 16—Pacific Highway Association, Oakland, Cal.

Oct. 4-7—Northwestern Road Congress, annual meeting, Cedar Rapids, Ia.

Oct. 11-15—National Paving Brick Manufacturers' Association, annual convention, Dayton, Ohio.

Feb. 12-19, 1916—Ninth Chicago Cement Show, Coliseum and Armory, Chicago, Ill. Cement Products Exhibition Co., Robert F. Hall, 208 South La Salle street, Chicago, secretary.

Feb. 15-18, 1916—Second National Conference on Concrete Road Building, Auditorium hotel, Chicago, Ill. J. P. Beck, 208 South La Salle street, Chicago, secretary.

Charles M. Kelly, president of the James C. Goff Co., Providence, R. I., and also president of the New England Builders' Supply Association, is visiting the Panama-Pacific Exposition at San Francisco in company with Mrs. Kelly, having passed through Chicago en route to the Fair. Another attendant at the Fair at this time is Mrs. James H. Allen, wife of the president of the National Builders' Supply Association.

The July issue of "Material Facts," the house-organ of the Cleveland Builders' Supply Co., Cleveland, Ohio, is devoted entirely to "good roads." In an editorial announcement the publication states: "This is Good Roads Number—just because right building deserves a right environment, and no civic growth is possible with highways going to pieces, a high repair cost, and a general appearance of decay."

The Legislative committee of The Atlanta (Ga.) Builders' Exchange has been actively engaged in its attention to bills affecting the building industry, among them being the semi-monthly pay bill, the general arbitration bill and the bill to abolish the fellow servant rule. The committee is composed of D. A. Farrell, J. T. Rose, R. M. Walker, B. Mifflin Hood and V. H. Kriegshaber, and its influence is being felt materially.

Increased membership and general activities were reported by Retiring President E. R. S. Embracy, of The Builders' & Manufacturers' Exchange of Washington, D. C., which chose the following officials at its recent annual meeting: President, James L. Parsons; first vice-president, Andrew Murray; second vice-president, E. S. Kennedy; third vice-president, P. R. Pullman; treasurer, James L. Marshall and secretary, Charles E. Welsh.

President W. W. Dickinson of the Arkansas Brick & Manufacturing Co., Little Rock, Ark., has taken advantage of the opportunity to inform his customers of the splendid crops and the assurance that Arkansas will soon be in a position to "feed herself." He calls attention to the fact that now is the time for optimism and as the sale of foodstuffs will give residents of that state a surplus, building operations and other improvements will soon be under way and normal conditions in all lines of business will be resumed. The "punch" of his letter is in the last sentence, wherein he states "an active dollar will do more good than a million inactive dead ones."

John A. Ferguson has been appointed a member of the new building code commission of Pittsburgh, Pa., and is particularly well qualified to take this position because of his knowledge of construction work from the engineering standpoint. Charles H. Chance is chairman of the sub-committee which will help to make rules for building dwelling houses and duplex houses; Richard Hooker is chairman of the committee for hotels, lodging houses, stables, boarding houses and garages; J. Charles Wilson is chairman of the committee for manufacturing plants, dry cleaning buildings, store houses and warehouses; Sidney F. Heckert is chairman of the committee for churches, schools and apartment houses; R. J. Trimble is chairman of the committee of fire limits, and Frank S. Guthrie is chairman of the committee on explosives.

At the recent annual meeting of The Builders' Exchange, Atlanta, Ga., Charles W. Bernhardt was elected president, B. Mifflin Hood, vice-president, and R. M. Walker, treasurer.

Edward E. Krauss, who recently retired from the position of secretary of the American Concrete Institute, has become district sales manager at Philadelphia for the Penn-Allen Cement Co., of Allentown, Pa.

Wm. Miller, Jr., the new president of The Builders' & Traders' Exchange, of Cincinnati, Ohio, is receiving warm support to his idea to hold monthly meetings of the organization and it is likely that this plan may be carried out.

The following officers were elected at the recent annual meeting of The Builders' Exchange of Brandon, Manitoba: President, Charles W. Hall; vice-president, Frank C. Lissaman; treasurer, A. R. McDiarmid, and secretary, F. M. Grant.

John A. Ferguson, Assoc. M. Am. Soc. C. E., recently engineer of the Bureau of Building Inspection, Department of Public Safety, Pittsburgh, Pa., has been appointed engineer and secretary of the Pittsburgh Building Code Commission.

Officers of the Builders' Exchange of Baltimore, Md., as elected a few weeks ago, are as follows: President, Herbert J. West; vice-presidents, A. J. Dietrick, C. Morgan Marshall and John Trainor; secretary, I. H. Scates and Treasurer, S. Frank Bennett.

R. M. Chapman, one of the progressive men of Montgomery, Ala., is interested in the formation of a builders' exchange at that point and is receiving considerable encouragement from secretaries of exchanges throughout the state, as well as from local business institutions which would be benefited by the proposed organization.

The Builders' Exchange, Norfolk, Va., elected the following officials at its recent annual meeting: President, A. B. Consolvo; first vice-president, J. A. Turpin; second vice-president, J. Arthur Addenbrock; third vice-president, C. Moran Barry; treasurer, Ira Cahoon, and secretary, George L. Wadsworth.

John H. Bean was elected president of The Builders' Exchange of Los Angeles, Cal., recently, receiving a total of 93 out of 96 votes cast. Other officials selected were as follows: First vice-president, P. J. Bolin; second vice-president, S. L. Weaver; third vice-president, M. A. Berne, and treasurer, John Griffin.

Past President M. Augustus Williams, the Builders' Exchange of Norfolk, Va., upon the occasion of its recent annual meeting urged the members to substitute for the present lien law, which is over 100 years old, legislation which provides that a bond be given by the general contractor which would effectively protect the owner, material man and the workman.

The constitution and by-laws of The Builders' Exchange at Dallas, Tex., have been so amended that now business men and concerns whose interests lie with the promotion and successful accomplishment of construction and building operations in the city, as well as the state of Texas at large, are eligible to membership. The officers recently elected for the ensuing year are: President, Frank Hanson; vice-president, Harry J. Curtis; treasurer, L. R. Wright; secretary, Pat Beggs, and sergeant, F. B. Davis.

The BUILDERS' POET

How Bill Went Broke.

I
Bill Jenkins dealt in coal and such,
And wasn't honest overmuch;
Perhaps he'd stand upon the scale
Or bill a boulder in the sale;
In fact, a ton of coal by him
Was weighed according to his whim.

II
In lumber, lime and lath he dealt,
And gathered in a deal of gelt;
His business grew and people got
To trade with Bill an awful lot.
But one day something happened that
Laid Bill's ambitions cold and flat.

III
A stranger moved to town that day,
He hired a store, he bought a dray,
He saw the Weekly Star and had
Prepared a double-barreled ad,
Which told the reader he had come
To make the building business hum.

IV
The wise ones sadly prophesied
They'd see the day his business died.
"To advertise a simple fact
Well known to all, was lack of tact;
Bill Jenkins never did," they said,
"And see the way his business spread."

V
The stranger stated in his ad
The virtues of the things he had;
Told sundry uses for cement
About the farm and home, and sent
A raft of folders, each designed
To show an honest man behind.

VI
His ads were framed in such a way
The readers understood that they
Could 'phone a salesman, who would state
And pointedly elucidate
How basement, ceiling, walls and roof
Could be both fire- and water-proof.

VII
Such industry was well repaid,
For in a year or two his trade
Caused easy-going Bill to rise
And hastily to advertise;
But what's the use—you know his fate—
Bill's resurrection came too late.

—Frank Adams Mitchell.

Vacation Days.

In summertime the weary clerks break loose from the accustomed works, and take a well-earned rest; the janitor lets duties skip, and packs his grip and takes a trip to some place East or West.

And e'en the freckled office boy deserts his post, with shrieks of joy, and scampers to the woods; for it occurs to all who toil that when the days of August broil, vacations are the goods.

But there is one who oft remains on duty, wearing nerves and brains, while others have their fun; the boss, who needs a layoff most, in toiling, toiling at his post, as constant as the sun. It would be better far for him, it would renew his strength and vim, if he would quit the grind, if he would drop his business chores, and chase himself around outdoors, and leave his cares behind.

The time invested in a rest is time invested for the best, for men who always toil, do so at sacrifice of power; their nerves get frayed, their tempers sour and sorer than a boil. So for a little while forget the business with its care and fret; and be a youth once more; go fishing with a good long pole, take headers in the swimming-hole, slide down the cellar door.

A tonic it will prove to you; vitality it will renew, your grouch it will destroy; and when from woodlands picturesque you go back to your chair or desk, you'll find your work a joy.

You have to take a rest at night, when in your bed you slumber tight, and snore some ragtime tunes; and if you knew not that repose, your usefulness full soon would close, your surname would be Prunes.

And if a little rest is good, a longer one, in field or wood, by grove or gurgling stream, will help you as it helps your clerk, and brace you up and make your work no more a nightmare seem. So, Mr. Cement Man, be wise, get out and gambol 'neath the skies, and canter like a colt; get clear away from every care that brings the silver to your hair, from business jar and jolt. And take along to brook or glade the helpful paper of your trade, while you are resting there; thus you'll improve the leisure day, and drive all loneliness away, and have some truths to spare.—Walt Mason.

Fred W. Upham, president of the Consumers Co., one of the leading spirits in Chicago who is always on the lookout for her welfare and betterment, was one of the first of Chicago's patriotic business men to signify his intention to avail himself of the opportunity now offered to get into military training. It is expected he will be a member of the camp to be conducted by the federal government at Fort Sheridan next month.

One of the successful young specialty men of the Pacific coast is Charles Holloway, Jr., who two years ago organized the Holloway Expanded Metal Co., with offices in San Francisco. He was formerly connected with the Roebling Construction Co. as manager of the wire lath department, and while working in that capacity conceived the idea that greater opportunities were possible through the organization of his own company.

Harry L. Lewman, of Louisville, Ky., president of the National Association of Builders' Exchanges, was entertained by the Atlanta, Ga., exchange recently. He was tendered a dinner by the members, at which he addressed the meeting most interestingly, particularly upon the use of the standard form of contract which has been prepared and approved by the National Association of Builders' Exchanges, American Institute of Architects, the National Association of Master Plumbers, and the National Association of Steam and Hot Water Fitters. Mr. Lewman urged the introduction of this standard form of contract in the building business.

The RETAILER

Essentials of Salesmanship*

BY W. E. SHEARER.
District Sales Manager, American Cement Plaster Co.

Do you realize why you are today enjoying a position with your institution? Do you know why you have a job?

If not, let me tell you that the primary and only reason that you are employed is due to the fact that your manager cannot do all the work himself. Therefore, it is necessary for him to seek and employ men to fill positions that he, if he is wise, may have before the man is employed.

This statement brings to your mind the undeniable fact that the most important thing in the question of sales is organization, and the nearer perfect an organization is, the more satisfactory will be the results attained.

I believe the proper definition of organization is "that it consists in arranging parts which have a special function to discharge so that their orderly, harmonious, efficient direction is made possible. You can, therefore, quickly see that you have been employed as a part of an organization to fill a certain position, with the expectation that you will do what is expected of you in your employment. You, as a part of your organization, must of necessity either assume and carry your individual responsibility, thereby being an aid, or you must be a hindrance. If the latter, the quicker the fact becomes known and your services disposed of, the better for the organization.

In your manager you have an experienced man in the knowledge of your business. This very experience of his tells him his responsibility, and he assumes it. You should not waste one moment of your time endeavoring to determine the duties and responsibilities of your manager, but rather your own individual responsibility in the position you are employed.

A child is born. From the very beginning, each fiber, muscle or bone begins to find and assume its position and perform its function. This is absolutely essential in order that the growth and development of the child may be perfect. Any defect in any part retards its growth to manhood. When any defect in a child is discovered it is either cured, or removed and this for the good of the child itself. The same with your organization. Each man must assume, and carry his responsibility as does the muscle or bone in a child. When your manager discovers that you are defective in the performing of your duties and are failing to carry your responsibilities in the growth and development or expansion of your company, he must in his duty either cure you in your weakness or remove you entirely.

If you do not recognize your definite duties, assume your individual responsibility, deliver to your company net results, become a part of the growth and expansion of your institution, then you fail to perform the function for which you are employed, and so far as you are concerned your company cannot grow.

Manager Conversant With Firm's Requirements.

When you secured your position your manager first had the position to fill. He carefully weighed results he would expect from this position. He carefully weighed the strength of his competition and determined the character of man necessary to meet the situation and successfully fill that particular part of his organization. You were selected, and it is your duty to succeed, thereby growing yourself and assisting in the growth and expansion of your institution. I believe that when a salesman is given certain work to perform he should at once assume the individual responsibility of producing results for his company.

I believe that he should determine to carry to a successful end what he undertakes; by so doing he will become so important a factor in the organization that his services will be in demand.

I believe that he should understand that his value to his company and the amount of compensation he will be paid depends entirely upon what he can and will produce in net results. I also believe that unless he understands these fundamental principles and works with a determination to be an important factor, producing and expecting his company to enjoy net results from his efforts, he should recognize his failure and seek employment to fit his caliber.

The question is, how can you make yourself of the most value to your institution, and finally to yourself?

Three Steps in Selling.

Selling consists of three definite important steps: First, attract attention; second, interest your prospect; third, carry conviction.

Sheldon would sub-divide these into a great many other divisions, but we do not intend to go into details.

Now, before discussing these three points let me say that I believe that every man who enters into the profession of sales work should first realize that his choice of vocation is a profession, just as high in ideals, just as great in possibilities and just as highly respected as any profession.

This being true, then you should prepare yourself to be a success in the profession you choose. The young man who intends to enter the profession of law does what?—You know. The young man who enters the profession of medicine does the same thing.

There are so many young men who think selling is an easy proposition and consists of only being a good fellow. They enter the vocation with wrong ideas, to begin with,—lack of preparation, and consequently—failure. Assuming that you have a fair education, an ordinary degree of common horse sense, you have about all the essential features necessary

W. E. SHEARER.

for a man to begin studying law, medicine, surgery or sales. With this fair education and common sense you secure a position. The very first thing you do is to determine the policies and principles of the company with whom you have engaged. If they are clean, good, sound principles and policies you are fortunate and you should congratulate yourself.

Know Your Own and Competitors' Goods.

The next thing for you to do is to learn every feature of the commodities or materials that your company has to sell. Next, learn the value of the competitive materials so that you will be thoroughly informed of the other fellow's side of the case. You can find no difference between the lawyer's preparation of his case to present to the jury and the need of preparation of your case to present to your customer. The lawyer who best prepares himself and most thoroughly studies his own side of the case as well, as the opposite side, is the one who climbs to the top. The salesman who best prepares himself and studies both sides of his case for the best presentation to the buying public is the one who succeeds. The fellow who does not go to this trouble is the one who either stands still or fails.

This carries us back to the three principles. First, attract attention. When you walk into a man's place of business, attract his attention by your appearance, by your gentlemanly conduct. Be courteous. Do what you would like the other fellow to do if the case were reversed and you were the buyer and he was coming in to sell to you. After you have your customer's attention, proceed to interest him. No man can interest another in discussing a proposition of any character unless he knows what he is talking about; in order to interest your prospective buyer you must first know every angle of the commodity you are trying to sell.

Devote your entire time to an interesting discussion of your business and do not devote one fraction of a minute in discussing the demerits of your competitors' goods. Do not scatter your shot, but center your fire on the one thing—a determination and effort to succeed to interest your prospective buyer in the fact that you know the goods you are talking about, and that everything that you say is true. Carry to his mind a conviction not only that you are honest and square in your methods, but that you are presenting an article of unquestionable value. Get your prospective buyer to begin asking questions, if possible, and be ready to answer them. I have always said that if I could get a man to ask me one or two questions regarding the commodity I was trying to sell, he was my meat.

Finally, when you have succeeded in interesting your prospect, use every means within your power, as a lawyer to the jury, and carry to his mind a conviction that your side is right; or, in other words, he should buy promptly. Do this, and you have won your case and have taken just one step further towards making yourself an important factor in your organization and in the expansion and growth of your institution. You will then have shown your manager that you are not only willing, but capable of carrying your individual responsibility. Every sales manager in the United States, if he studies his problem, places a value on his salesmen according to the lack of supervision they require. Don't you see then that this compels you to recognize your responsibility, study your goods, study your problems and deliver net results to your company?

There are two different kinds of salesmen, not discussing the question of good, bad or indifferent ones; I mean two kind of sales work. One is order taking and the other is creative or constructive. Any 14-year-old boy can go out into the city and write orders for the different materials your company handles if some real salesman has been out ahead of him for a month or a year doing some real creative sales work, which brings a demand to your company for the very materials you have to handle. The writing of an order is clerical. Creating a demand for your particular commodities is influencing minds. Carrying a conviction is real sales work.

It is no trouble to employ men who are able to write a nice hand and turn in nice looking orders, but there is trouble in finding men who have the fundamental principles of common sense, determination, preparation and ability to go into this market and create or influence other minds to the point of desiring to use the materials your institution handles. Every architect in Cleveland should know of the Cuyahoga Builders' Supply Co. and its commodities. Every contractor in Cleveland should be equally well informed. Every man who is a prospective buyer of building materials should know every angle of your business and materials. Then, your duty is to educate and keep everlastingly at it.

Do not put yourself ahead of your company. Do not consider your individual personality as too great a factor, but rather consider yourself a link between the buyer and the institution you represent. Educate and bring architects, contractors, owners and real estate men to do business with your institution, because of their desire created by the impression and arguments that you have presented as a connecting link between your company and the buyer. Create new business.

I wish I could spend a half hour talking to you regarding the advantages in gypsum blocks and plaster board alone as an opportunity for any good, live salesman to earn a good salary and net results to his company. This is not only true with our materials, but with a lot of others; but let us confine ourselves to plaster board for a minute. I want to tell you that there is not a single house that will be built in Cleveland this year but what should use plaster board instead of wood lath. I also want to say that I do not believe five per cent of the owners in the city of Cleveland know what plaster board is. In plaster board you are not selling a luxury; on the other hand, architects, contractors, and owners recognize the need of something better than wood lath. They are not satisfied with lath cracks, sap stains or defects that follow the use of wood lath. In their hearts they would like to know of something that would remove or avoid these difficulties.

Therefore, the selling of plaster board is nothing more or less than telling to every owner in Cleveland that you have the very thing he wants, but does not know about.

If you will devote your time to studying plaster board, and then select 100 owners of apartments or residences in Cleveland and present to these 100 men the merits and value of plaster board as compared with wood lath—do it in a distinctive, effective way; attract their attention to the fact that you have something they want, interest them in the discussion of the article you have, I will wager that you will get 75 out of the 100.

* The arguments in this article on the "Essentials of Salesmanship" were first delivered by Mr. Shearer at a meeting of the sales force of the Cuyahoga Builders' Supply Co., Cleveland, Ohio. For the purpose of securing the highest degree of efficiency, the salesmen of this company meet in the firm's offices every Monday evening. Able speakers, well versed in builders' supplies and salesmanship, address these meetings.

You say this is the manufacturers' problem. That is true to a large degree; but it is your problem as an employe of your institution so far as net profits are concerned. The same principle that applies to the creation of a demand for plaster board as a new and profitable commodity applies to numerous other things that you have to sell. Interest yourself in the difficult problems that your position brings you. Don't follow the lines of least resistance. Any old chump can float down stream, but it takes a live wire to meet and overcome obstacles in this stream of life.

A good many salesmen work on the theory that because a certain contractor or builder is buying of the other fellow he is impossible. They do not care to exert the necessary effort to secure his business. If I had a man of that kind and learned that he had such an idea in his head I believe I would call in the surgeon and remove him from the organization. Now, a tree never becomes strong without meeting and resisting the storms. No salesman ever becomes strong and effective without looking for difficulties and obstacles, analyzing and digesting them—and solving them.

As a sales manager I allow the question of creative sales work and new business stand side by side in determining the value of a man. It is true you must work to retain your present establishment and you will lose a customer once in a while; but a man that is worth having in an organization will always gain two new customers where he loses one.

Again, one of the most essential features of a sale is the question of. "When is that sale complete"? A sale is never complete until the collection is made.

Salesman Should Be Good Collector.

A man who will sell a party some goods simply because he gets an order, leaving the question of collecting to the credit man, with indifference, is a hindrance to any organization. A man who will sell goods and not turn in to the credit man all the facts regarding the buyer's financial responsibility is a poor salesman. A man who cannot go out and collect for the very goods he has sold should not be retained in his position. I want to say to you that a good salesman is always a good collector, and a poor collector is never a good salesman.

This brings you to another important feature of sales work. This is "co-operation."

You, as a salesman should always be ready to co-operate with your credit man, to the end of selling the right man, thereby making collection possible.

You should co-operate with the buyer, thereby assisting him to buy in accordance with the demand of the trade.

You should co-operate with your traffic man, thereby helping him to make deliveries of the goods you have sold.

You should co-operate with your warehouse man for the same reason.

Do not knock other departments in your institution, but boost them when you are out among the trade.

Do this, and you are giving your manager the co-operation that he expects from you and you are adding that much more to the growth and expansion of your institution.

After all is said and you have determined to carry your individual responsibility, be an important factor as a unit in your organization; work everlastingly on creative sales work; be conservative and careful in the question of credits; co-operate with other branches of your institution for the best results. In doing these things, you will have become an important factor in the development of your company and you will have actually, unknowingly to yourself, grown individually and have increased your own value to the point that you need have no fear of losing your position, but rather that your manager will be looking to you to fill at some time a more important one.

WISCONSIN LINE-YARD FIRM CHANGES NAME.

The W. J. Durham Co., with headquarters at Coloma, Wis., and operating branch yards at Pickett, Bancroft and Ripon, handling lumber, coal, lime, brick and a general line of building material, has sold its business to the Baker-Upham Co., a reorganization of the old company. The company has amended its articles of incorporation, changing its name to the Baker-Upham Co. and its location from Coloma to Hancock.

SPENDING MILLIONS ON BUILDINGS.

Millions of dollars—rumor says from $5,000,000 to $10,000,000—are being spent by the E. I. du Pont de Nemours Powder Co. in the construction of a powder plant near Richmond, Va. Much secrecy exists in connection with the erection of the plant, but it is well known that at least 10,000 men are employed in putting up the structure. Eighteen hundred acres have been purchased by the company and on this property several townsites have already sprung up.

In addition to the construction of the plant, thousands of men are busy building stores, hotels, homes, theaters, etc., occupying tents in the meantime.

Building Show Draws Conventions.

By the selection of Cleveland as the meeting place of nearly all the large trade organizations for their 1916 annual conventions, a national character is established for the first American Complete Building Show that is to be held in the Ohio metropolis during February of next year. Convention dates are fixed to correspond with the dates of the big exposition.

From conventions already secured, through the committee of The Complete Building Show Co., assurance is given that there will be in Cleveland during each day of the show not less than 2,000 visiting material men.

One of the most important gatherings will be that of the members of the National Builders' Supply Association, which holds its annual convention on Feb. 17, 18 and 19. The recent new activities of this association and the discussion of important matters that will come before the next meeting make it certain that the Cleveland convention will be the largest in the organization's history.

During the two days preceding the opening of the National Builders' Supply Association meeting, the Ohio Builders' Supply Association will be in Cleveland for its annual session. This organization, under the leadership of William A. Fay, Cleveland, has taken on a new lease of life and is doing much of real service to its members which is expected to stimulate an active convention of record-breaking attendance.

During the entire week, from Feb. 14 to 19, the Ohio Retail Hardware Dealers' Association will be in session in Cleveland. This will bring together not less than 1,200 dealers from the state, representing every community large enough to have a store, all of whom are interested in building operations. Cleveland was selected as the meeting place on account of the Complete Building Show. The hardware men have an exhibit of their own, for the trade only, and this will be held in Central Armory. The presence of the hardware merchants guarantees, on the part of the manufacturers, an excellent builders' hardware section in the big show at the Coliseum.

During the second week of the exposition it is expected the city will be filled with clayworkers. Every effort is being made to bring to Cleveland the annual meeting of The National Brick Manufacturers' Association. Although Atlantic City was practically slated for this meeting, before the building show plans were announced, expressions from scores of the most active members of the association favoring Cleveland give confidence to the prediction that the clay men will take advantage of the building exposition by going to Cleveland.

The annual meeting of Society Advocating Fire Elimination will be held in Cleveland during the show and this will bring together several hundred manufacturers and dealers to discuss plans for furthering the campaign in the interest of safer building in the United States.

Organizations of other trades, including the master house painters, the state building exchanges, plasterers, lathers, roofers and others, whose annual meetings have been scheduled for other cities, are arranging to include in their programs side trips to Cleveland for the purpose of attending the show.

Plans for the exposition, which will be the American counterpart of the London Building Trades Exposition, are progressing satisfactorily, according to the officers of the company. The active space selling campaign will begin on Sept. 13, when the first meeting of stockholders will be held at the Statler hotel, Cleveland. Consistent with the entire purpose of this show, the selling of space is to rest largely with the 50 manufacturers and dealers who are the sponsors for the enterprise. Each of the stockholders will invite others with whom he does business, to become exhibitors. The stockholders put emphasis upon the fact that the show is not being conducted for profit, but that its first purpose is the education of the prospective builder to better, safer and more artistic buildings of all classes, as a stimulus to building throughout the Middle West. The only profit expected from the show is to come through increased business in the trades. Thus, the show becomes everybody's show, say the officers, and those who make the most of it profit most.

Applications for space in the show are coming in from a remarkable variety of trades that are allied with the building enterprise of the country. The scope of the show is so broad that it takes in everything from the alloting of residence property by the real estate operator, to the planting of shrubbery about the completed house by the landscape architect. It includes also every class of building, from the garage to the skyscraper, and this range of construction will be exemplified in the exhibits, it is believed.

The officials of the show are encouraging the community display. The manufacturers of metal lath, for example, are taking up, through the national organization of the trade, with headquarters in Chicago, the question of a united display upon a pretentious scale. The manufacturers of hollow building tile, through its national association, with headquarters in charge of Secretary Charles T. Harris, Cleveland, will reserve a large space for what is announced as the finest display of the practical use of that product ever made. A group of Ohio brick manufacturers will unite in a display that will be one of the striking features of the show and one that it is intended will exert a considerable influence upon future building within the parish of the building show.

The Cleveland Builders Exchange, the "illustrious example" of such organizations to all the country, through its secretary, E. A. Roberts, is giving active coöperation in the promotion of the show. Real estate men, architects and engineers, painting contractors and paint manufacturers, furniture dealers and makers of all manner of building and household devices, are united with the building material interests in making the Cleveland show the most comprehensive exposition of the trade and its allied arts, that ever has been held in the United States. The dates of the show are Feb. 16 to 26 and the place is the Coliseum, an auditorium with more than 65,000 square feet of space on one floor, located in the heart of the downtown section of Cleveland.

RETAILERS WANT QUOTATIONS.

The following retailers have written to ROCK PRODUCTS AND BUILDING MATERIALS asking for quotations on builders' supplies:

J. M. & C. M. Brizard, Strattonville, Pa., wants quotations on lump and hydrated lime in carload lots, delivered Strattonville.

C. T. Wade, Farina, Pa., wants quotations on gravel, delivered Farina.

Geo. Rainey, Lillie, Pa., would like prices on carload lots delivered to Lillie of cement and gravel, crushed rock and brick.

The Golden Lumber & Contracting Co., Lorraine, Ill., wants quotations on carload lots and less, delivered Lorraine, of hydrated lime.

The Green Box & Lumber Co., Rockford, Ill., wishes quotations on sewer pipe, waterproofing, builders' specialties and roofing.

Blandinsville Lumber Co., Blandinsville, Ill., wants prices f. o. b., on cement, hydrated ime, sand and gravel, crushed rock, brick and roofing.

J. E. Weaver, Davidsville, Pa., states that he is doing a commission business in 13 counties of Pennsylvania in roofing, but would be glad to take up the matter of handling cement, plaster or, in fact, any building material.

Frank J. Smith, Ulysses, Pa., would like to buy a carload of cement.

Branch Yards Solve Service Problem.

Prompt Delivery of Materials by Baltimore Firm Made Possible Through Establishment of Offices and Yards in Building Sections.

Believing that the trade can be better served and that the greatest degree of economy may be practiced by locating its retail yards in various parts of the district to which it caters, the Maryland Lime and Cement Co. has placed branch offices and yards at strategic points in the city of Baltimore, Md.

The company, which is owned by Charles H. Classen and his son, Henry W., has its main office and yard at Eastern and Central avenues and branch yard at Twenty-fourth and Oak streets, 1211-13 South Charles street and 3-7 East West street, and believes that with this arrangement the problem confronting building material dealers has been solved. From their experience, covering a combined period of over 50 years, the Classens have arrived at the conclusion that the big factor in the building material business of today is "service." With the proper distribution of yards, service can be promptly and economically given. By having a yard in close proximity to the principal building centers, a small quantity of materials, such as a few bags of cement or plaster, can be delivered promptly without much loss of time and delivery expense.

It was during the decade of 1860-70 that the firm of Henry W. Classen & Co. was started by the father of the present Charles H. Classen. The elder Classen manufactured brick which he sold to the Baltimore market, together with imported cement and domestic Rosendale cement. In 1874 Charles H. Classen joined his father in the business. Until 1890 the father continued actively in the business, but during that year retired. The firm was continued by Charles H. Classen as the sole owner.

In 1893 Charles H. Classen, with Messrs. Diggs and McAllister, founded the Maryland Lime & Cement Co. This firm devoted its efforts to wholesaling and retailing cement, lime, fire brick and building materials in general. Charles H. Classen continued the brick business under the old firm of H. W. Classen & Co. until 1899, when he disposed of the brick plants to the Baltimore Brick Co. The death of Mr. McAllister in 1897 and the retirement of Mr. Diggs in 1902 left Charles H. Classen as sole proprietor of the Maryland Lime & Cement Co. Later on Henry W. Classen was admitted to an interest, having grown up with the business.

Before the big Baltimore fire in 1904 the firm was located in the heart of the business section on Bowly's wharf and South street. The fire destroyed five warehouses of this firm and later the city took this property over for dock purposes. In the meantime the Maryland Lime & Cement Co. had located at Central and Eastern avenues, Twenty-fourth and Oak streets and 1211-1213 South Charles street.

"As yet we haven't taken a liking to motor trucks," says Charles H. Classen, in commenting on the method of delivering building materials to the Baltimore market. "We own enough teams to take care of normal business and when conditions warrant we hire extra teams. Occasionally we do use motor trucks, but only for long hauls. In such instances we hire the trucks."

Retailers of building materials in Baltimore, while classifying sand and gravel as builders' supplies, do not engage in their sale. Practically all of this business goes to the Arundel Sand & Gravel Co., which secures its material from the Patapsco river. A new firm, under the name of the Curtis Bay Sand & Gravel Co., has recently been organized and will undoubtedly become a competitor of the Arundel company for the Baltimore sand and gravel business. The bulk of the crushed stone business is supplied by the Calvert Quarry Co., which recently suffered a fire at its plant.

While receiving a good portion of the retail building material business of Baltimore, the Maryland Lime & Cement Co. is not the only concern contending for this trade. There are at least 18 other retailers and among them at least two of great importance.

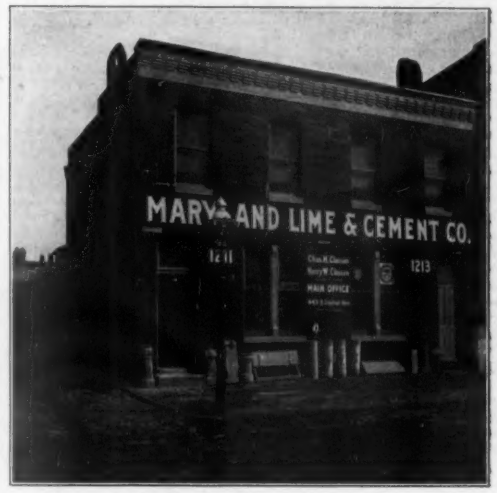
MAIN OFFICE AND EASTERN WAREHOUSE AT CENTRAL AND EASTERN AVENUES, BALTIMORE.

MAY FORM STATE ASSOCIATION.

Because of the action of the members of the Jacksonville (Fla.) Builders' & Traders' Exchange in voting to exclude from membership in the organization material dealers in other cities outside of Jacksonville and Duval county because the organization was formed for the purpose only of bringing business to local firms and to benefit interests there, it is said that the state material men will form another organization as a result.

SAMPLES AND CATALOGUES WANTED.

Fort & Poteet, architects, Van Huss building, Lakeland, Fla., have requested that manufacturers of building materials send them catalogues and samples.



SOUTHERN WAREHOUSE AT 1211-12-13 SOUTH CHARLES STREET.

Brevities of the Retail Field.

Singler Brothers, of Campbellsville, Ky., have opened a branch at Lebanon, Ky., in a large tobacco warehouse near the Louisville & Nashville depot. The concern will handle lumber and a full line of builders' supplies. The concern has operated in Campbellsville, Ky., for several years, and has also been doing business in Lebanon. The latter increased to such a point that the branch office and store room had to be opened.

The W. W. Knott Lumber Co., of Lebanon, Ky., recently opened a store room and office in a building adjoining the City Hall. The company carries a complete line of builders' supplies, millwork and lumber.

The Rice Lumber Co. is a new concern at Pineville, Ky., which is handling cement, lime, brick, plaster and other supplies. The firm is composed of Clyde Rice, F. F. Caywood and J. M. Pope, all of Harlan, Ky. Rough and dressed lumber and millwork will also be carried.

The firm of Mills & Trubble, of Danville, Ky., composed of Parker Mills and F. K. Trubble, has built in addition to its sheds and is now handling a supply of all kinds of lumber and building materials. The concern has been in the lumber business for several years, but the building supply department is a new one.

Orders for face-brick which have been secured recently by the Washington Brick, Lime & Sewer Pipe Co., of Spokane, Wash., include: Two hundred and thirty thousand for the St. Augustine church at Spokane, three carloads for the Carnegie library at Sedro-Woolley and 50,000 for the new Mohawk building at Spokane. The company also supplied 16 carloads of hollow partition tile for the latter building and a large quantity for St. Michael's Scholasticate at Spokane.

NEW BUILDERS' ORGANIZATION PLANNED.

At the recent convention of the National Association of Builders' Exchanges in Pittsburgh, Pa., a movement was launched to organize a national body representing all national associations of builders and also of real estate exchanges. The idea of this body is to give it power to act for its members as distinct from the National Association of Builders' Exchanges, which at present has not that power. The primary purpose of the proposed organization is to standardize the building codes of various cities and to get some uniform basis on which the building departments of all big cities may unite to make house building especially more economical and satisfactory and at the same time more profitable to all concerned. The meeting was presided over by President H. L. Lewman, of Louisville, Ky., and Secretary E. M. Tate, of Pittsburgh, handled the details and reports.

NORTHERN WAREHOUSE OF MARYLAND LIME AND CEMENT CO., AT TWENTY-FOURTH AND OAK STREETS.

Mr. Tate announces that the first aim of the proposed organization will be to secure uniform legislation affecting building operations in all states. This will include the establishing of national standards for building materials, names and measurements. The balance of the committee appointed by President Lewman which will shape up the preliminaries for this organization consisted of William A. Davis, of New York; H. F. Hackedorn, of Indianapolis, and H. L. Lewman, of Louisville.

No definite place has been fixed upon to hold the fall meeting when the real work of organizing this big body will be done. Chicago has been suggested as the most central meeting place and a good proportion of those who attended the Pittsburgh convention were in favor of that city. Full announcement along this line will be made in the very near future by Secretary J. M. Vollmer of the National Association at Louisville.

Among those who attended the Pittsburgh convention were the following: C. A. Donaldson, Grand Rapids, Mich, National Association Ornamental Glass Manufacturers; William H. Barr, Buffalo, National Founders' Association; L. R. Ferguson, Philadelphia, Association of American Portland Cement Manufacturers; Ernest Ashton, Allentown, Pa., American Concrete Institute; William A. Davis, New York, National Association of Marble Dealers; J. L. Jones, New York, American Institute of Metals; H. B. Nichols, Chicago, and J. J. Holden, New York, National Association of Roofers; H. F. Hackedorn, Indianapolis, American Society of Engineering, and the following from Pittsburgh: P. E. Maginn, National Association of Steam and Hot Water Fitters; John E. Kane and S. I. Haas, National Association of Real Estate Exchanges; J. D. Riley, Louis Lockhart, National Association Sheet Metal Contractors; John W. Poushay, National Erectors' Association; H. R. Gibbs, Paint Manufacturers' Association of the United States, and E. M. Ttate, secretary Building Construction Employers' Association.

EXCHANGE HOLDS OUTING.

The outing early this month of the Contractors' and Dealers' Exchange of New Orleans was a funfest at which "the more-the-merrier" idea seemed to prevail, although there was no questioning the quality of each joy unit. Each joyfester knew in a general way what to expect, although details were lacking, on the grounds that a tip in advance might spoil the fun. It is no wonder, the success of the affair. The following "Proclamation" by President Herman H. Thomas assured that, and certainly scattered the gloom clouds—for that occasion at least—which seem to have become a fixed boarder at the establishment of Gen. Business Conditions:

To Whom It May Concern:

I, HERMAN, President and High Exalted "Gazabo" of the only CONTRACTORS and DEALERS' EXCHANGE in this Grand, Glorious and Growing State, by the authority vested in me, do, hereby, set aside the Eleventh Day of August of this Watchful-Waiting, Democratic Administration, Year of Our Lord A. D., 1915, as a day of feasting and total rest, from all contracting, bidding, estimating, gouging, hawking, peddling of sub-bids and all other laborious work a day that will be entirely void of Associated Press Bulletins, Dogs of War, and other DARN FOOLISHNESS.

That, our hearts shall be filled with reciprocity and good cheer, that we shall shake the hand of our competitor, wish him success, and gladly impart to him all the tricks of the trade, that he may know whereby he can skin his fellow citizen and lay up much filthy lucre with which to buy "Swell Jitneys," eat luscious fruit and drink peaceful grape juice. When the milk of human kindness will not sour as in a thunderstorm.

I also order all the faithful and unfaithful to loosen up their purse strings. TIGHT-WADS and all individuals who are inclined to be penurious the other 364 days of the year, will hearken unto my summons. CAN the avaricious propensity for one day, and sell tickets for this festive occasion; five dollars is not much when you say it fast, and I would have you know this is a "fast bunch," that is, we travel fast—life is too short to be short—"Dum Vivimum Vivamus" (American Dum Dum).

I would have all my subjects "Wash-up, Clean-up" doll-up in their gaudy habiliments befitting the day, dude-up in the raiment of the fig leaf and pleasant smile, that ye will be free to exercise thy limbs for running, jumping, swimming and climbing the greasy pole. Bring thy appetite, thy jovial joy and thy paid ticket.

New Incorporations and Ventures.

Albert Oliver & Son, Inc., Manhattan, N. Y.; capital, $25,000; incorporators, Albert and Herbert G. Oliver and Henry C. Hunter, New York City.

Buhl-Zwigard & Co., Newark, N. J.; capital, $100,000; deal in brick, stone and building materials.

The Rand & Lawrence Co., Smithfield, N. C.; capital, $10,000; to manufacture and deal in building materials; incorporators, N. M. Lawrence, Jr., John Cobb and W. T. Grey, all of Smithfield.

Mathews Construction Co., Kansas City, Mo.; capital, $2,000; incorporators, J. A. Jackson, S. J. Mathews and R. B. Cardwell.

The West Coast Co. has been organized at Tampa, Fla., and will engage in a wholesale building material business.

Earl B. Sittey Co., Camden, N. J.; capital, $15,000; feed and building materials.

Swift Bros., Inc., Millbrook, N. J.; capital, $50,000; lumber and building materials; incorporators, H. H. Swift and others.

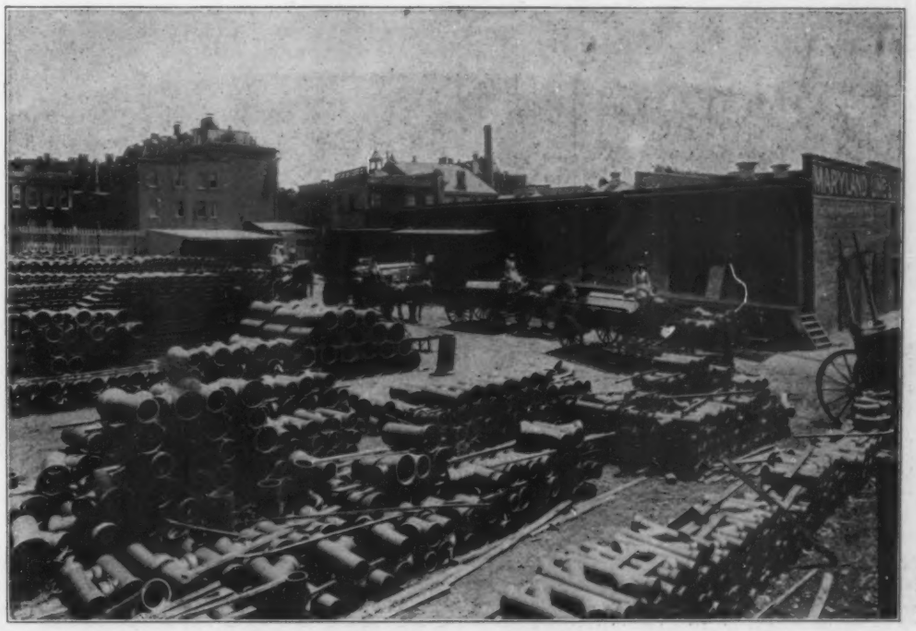
The Southern G-F Co., Atlanta, Ga.; capital, $5,000; incorporators, J. H. Deering, L. Aranstan, of Atlanta, and A. W. Clarkston, of Richland county; deal in building materials.

Atlanta Builders' Supply Co., Atlanta, Ga.; capital stock, $5,000, authorized capital, $50,000; incorporators Hamilton Douglas, Jr., Harry W. Belfor.

The Williamstown Lumber and Hardware Co., Williamstown, Ky.; capital stock, $10,000; will carry a general line of building supplies; incorporators Thomas B. Thames, Arthur C. Bishop, J. W. Bennett and Jamie Bishop.

Obituary.

GLEN D. BENNETT, 5006 Burt street, Omaha, Neb., 23, died recently in a local hospital following an operation for appendicitis. Mr. Bennett was an assistant department manager in the Sunderland Bros. company's office, having come there a few years ago from Lincoln, where he was educated.



NORTHERN SEWER PIPE YARD AT TWENTY-FOURTH AND OAK STREETS.

NEWS of the TRADE

July Shows Decrease in Building.

Building construction in the United States for July shows a decrease of 13 per cent in comparison with the corresponding month a year ago. Permits were issued in 100 leading cities in July, according to official reports to Construction News, for the construction of 22,014 buildings, involving an estimated total cost of $65,296,516, as against 23,925 buildings, aggregating in cost $75,344,215, for the corresponding month a year ago, a decrease of 1,911 buildings and $10,047,699, or 13 per cent. There were decreases in 66 cities and increases in 33 cities. The figures in detail are as follows:

Cities.	1915 No. of Bldgs.	1915 Estimated Cost	1914 No. of Bldgs.	1914 Estimated Cost.	% Gain.	% Loss.
New York (Boros Manhattan and Bronx)	647	$ 8,809,296	901	$ 7,589,067		16
Chicago	830	6,455,630	1,100	9,148,760		29
Boston	538	5,483,000	542	5,598,000		2
Brooklyn	1,174	4,196,609	1,188	3,679,946	11	
Philadelphia	1,713	3,659,940	1,556	4,661,850		21
Detroit	801	2,663,080	832	3,121,750		15
Cleveland	1,254	2,319,280	1,247	2,532,050		8
San Francisco	620	1,500,206	860	2,068,537		27
Buffalo	413	1,494,000	398	985,000	52	
Minneapolis	664	1,474,365	583	1,326,095	11	
Washington, D. C.	446	1,424,207	417	709,160	101	
Kansas City, Mo.	321	1,418,060	349	1,013,055	40	
Cincinnati	1,543	1,375,100	1,341	1,055,320	31	
Pittsburgh	388	1,186,632	362	1,510,212		21
Akron	197	1,148,570	230	405,960	183	
Los Angeles	603	936,873	853	2,081,396		55
Milwaukee	324	916,625	372	942,941		3
New Haven	538	788,454	94	427,815	84	
St. Paul	246	770,018	284	1,053,220		27
Rochester	290	762,123	377	1,067,101		29
Syracuse	163	752,957	203	854,263		12
Worcester	191	703,329	199	571,749	23	
Baltimore	191	695,375	373	837,455		17
Dallas	106	656,124	171	941,580		30
St. Louis, Mo.	674	615,148	526	1,287,859		52
Atlanta	316	613,146	264	495,902	24	
Indianapolis	538	596,078	637	1,140,969		48
Newark	211	581,132	216	1,172,043		50
Omaha	164	556,780	130	402,605	38	
Toledo	234	534,012	282	569,579		6
New Orleans		513,510		505,302	2	
Columbus	240	504,085	260	503,355		
Springfield, Mass.	122	436,755	163	794,335		45
Albany	264	416,750	312	692,005		40
Oakland	369	410,382	316	430,665		5
Trenton	84	385,521	83	296,024	29	
Portland, Ore.	225	373,375	554	870,745		57
Evansville	107	347,080	130	111,555	211	
Richmond, Va.	130	326,667	129	461,949		29
New Bedford	108	320,790	79	142,545	125	
Scranton	73	316,370	74	167,155	89	
Seattle	644	315,010	762	2,520,590		87
Erie	134	283,700	190	474,200		40
Sacramento	98	280,247	93	115,065	143	
Lincoln, Neb.	54	279,325	31	58,750	303	
Canton	67	247,450	57	245,900	1	
Memphis	192	245,385	261	333,006		26
Schenectady	49	239,148	109	278,210		14
Dayton	79	232,105	86	680,700		66
Nashville	260	220,665	65	454,039		51
Fort Worth	64	220,029	37	186,325	19	
Sioux City	60	218,200	38	322,050		32
Fort Wayne	57	201,580	74	256,100		21
Duluth	141	201,422	186	266,359		24
Portland, Me.	48	200,000	20	104,950	90	
Pasadena	123	190,749	168	409,022		54
Jacksonville	21	187,322	69	138,904	35	
Des Moines	81	181,405	60	140,600	29	
Salt Lake City	102	174,550	102	238,750		27
Topeka	51	168,991	50	64,490	162	
Cedar Rapids	47	167,000	65	405,000		59
Wilmington	63	163,675	72	184,521		11
Norfolk, Va.	62	163,575	58	210,950		22
Holyoke	21	156,915	14	71,885	118	
Savannah	65	154,840	73	163,191		5
Youngstown	99	147,650	131	493,240		70
Haverhill	47	146,950	19	84,900	73	
Paterson	76	146,775	107	229,546		36
Harrisburg	35	144,395	32	222,275		35
St. Joseph, Mo.	55	143,125	85	80,987	77	
East St. Louis, Ill.	42	142,976	43	163,295	28	
Huntington	44	132,040	69	104,650	26	
Troy	64	125,161	61	51,827	141	
Peoria	40	119,840	50	193,100		38
Elizabeth	43	118,363	62	179,190		34
Utica	48	112,205	67	138,375		19
Altoona	79	85,631	96	142,967		40
Brockton	37	84,517	59	94,670		11
Woonsocket	23	82,865	23	43,435	90	
Reading	47	82,700	50	103,600		20
Tampa	133	87,011	148	110,245		26
Allentown	30	79,075	27	157,635		50
Kansas City, Kan.	68	77,177	38	188,004		59
Passaic	27	74,750	34	131,575		43
San Diego	138	71,225	224	479,558		84
Springfield, Ill.	24	63,500	29	74,800		15
Bayonne	43	61,093	25	32,516		88
Lawrence	22	55,375	21	103,280		46
Saginaw	40	54,897	54	80,895		32
Binghamton	135	53,086	153	146,599		64
Superior	69	52,250	66	71,263		27
Hoboken	10	46,078	18	172,133		73
Stockton	50	45,163	31	88,849		48
Wilkes-Barre	59	45,133	95	108,413		58
Auburn		43,491		25,010	84	
Chattanooga	130	32,373	214	116,370		72
Tacoma	55	31,161	120	96,551		68
Charlotte	15	31,000	72	125,000		75
San Jose	38	29,971	87	52,110		43
Colorado Springs	22	22,690	30	14,225	59	
Totals	22,014	$65,296,516	23,925	$75,344,215		13

It is difficult to analyze with any degree of satisfaction the figures presented in the foregoing, as the increases and decreases are so scattering. There are some remarkable increases which are overcome by the large number of cities in which there was a falling off. Practically all of the large cities show material decreases. The only large cities showing an increase are Brooklyn, with 11 per cent; Buffalo, 52; Minneapolis, 11, as against a decrease in St. Paul of 27; increases in Washington, 101 per cent; Kansas City, 40; Cincinnati, 21; Akron, 183; New Haven, 84; Worcester, 23; Atlanta, 24; Omaha, 38; New Orleans, 2; Trenton, 29; Evansville, 211; New Bedford, 125; Scranton, 89; Sacramento, 143; Lincoln, Neb., 363; Clinton, 1; Sioux City, 19; Portland, Me., 90; Jacksonville, 45; Des Moines, 29; Topeka, 162; Holyoke, 118; Haverhill, 73; St. Joseph, Mo., 77; East St. Louis, 38; Huntington, 26; Troy, 141; Woonsocket, 95; Auburn, 24; Colorado Springs, 59.

The decreases are numerous and fairly large. In New York City there was a falling off of 10 and in Chicago 29 per cent. The decrease in Chicago is due more particularly to the serious labor troubles, the effect of which had only begun to be felt in July; Boston decreased 2 per cent; Philadelphia, 21; Detroit, 15; Cleveland, 8; San Francisco, 27; Pittsburgh, 21; Los Angeles, 55; Milwaukee, 3; St. Paul, 27; Rochester, 29; Syracuse, 12; Baltimore, 17; Dallas, 30; St. Louis, 52; Indianapolis, 48; Newark, 50; Toledo, 6; Springfield, Mass., 45; Albany, 40; Oakland, 5; Portland, Ore., 57; Richmond, 29; Seattle, 87; Erie, 40; Memphis, 26; Schenectady, 14; Dayton, 66; Nashville, 51; Sioux City, 32; Ft. Wayne, 21; Duluth, 24; Pasadena, 54; Salt Lake City, 27; Cedar Rapids, 59; Wilmington, 11; Norfolk, Va., 22; Savannah, 5; Youngstown, 70; Paterson, 36; Harrisburg, 35; Peoria, 38; Elizabeth, 34; Utica, 19; Altoona, 40; Brockton, 11; Reading, 20; Tampa, 26; Allentown, 50; Kansas City, Kan., 59; Passaic, 43; San Diego, 88; Springfield, 15; Bayonne, 26; Lawrence, Mass., 46; Saginaw, 32; Binghamton, 64; Superior, 27; Hoboken, 72; Stockton, 48; Wilkes-Barre, 58; Chattanooga, 72; Tacoma, 68; Charlotte, 75; San Jose, 42.

A decrease of 13 per cent is in no sense phenomenal but it is the large number of cities which show it, and at first glance it seems discouraging; it should be remembered, however, that in the bulk of these cities building has been remarkably active for a number of years. A revival of industry will absorb the vacant properties and there will from now on be a gradual change. There is one thing certain and that is that this condition cannot last long, and it is thought that this will probably be the last month in which such a general decrease will be shown.

THE MEMPHIS MARKET.

Memphis, Tenn., Aug. 19.—J. C. Lovelace, with J. A. Denie and Sons Co., stated to your correspondent that the building material trade in Memphis hoped for further improvement in the near future. He said that while the cement market was showing some demand, owing to local conditions, it was somewhat cut up. Plaster, sand, lime and terra cotta products were showing reasonably good demand. Mr. Lovelace stated that a few large contracts and many small ones about the city constituted the activity.

Many Memphians will attend American Builders' Week at San Francisco, Oct. 18-23. Invitations have been received by the local Builders' Exchange. Material and supply dealers had the boards at a meeting of the latter organization in Memphis, Aug. 10, in a series of discussions, M. S. Binswanger being chairman and W. W. Fisher, vice-chairman.

Milwaukee Fall Prospects Bright.

Milwaukee, Wis., Aug. 20.—The usual fall building activity is making itself manifest, even at this early date, as the amount of new building which is now being launched in Milwaukee is considerably in excess of that of a year ago. While the building supply interests have found that trade during the summer has been none too brisk, there is a widespread feeling that there will be so much activity this fall that the year's business will average up satisfactorily.

During the second week of August there were 68 permits issued by Building Inspector W. D. Harper for structures to cost $259,000, as compared with 80 permits and a building investment of $185,864 during the corresponding period a year ago.

The demand for lime and gypsum is more active, now that new building all over the city is farther advanced. Concerns handling face brick of all kinds are reporting a brisk business. Cement, sand and gravel seem to be moving freely. Building material concerns handling paving brick are meeting with a fine trade in this line, as most of the larger cities and towns about the state seem to be carrying on considerable work this season and a great deal of brick is being laid. Ricketson & Schwarz have secured several more good paving brick contracts this month.

Building material firms are much interested in the report that Charles Somers, of Cleveland, O., lessee of the Plankinton block on Grand avenue, Milwaukee, has interested sufficient capital to warrant commencement of his building program, which calls for the razing of the historic Plankinton hotel and the erection of a new hotel, theater and office building on the site, representing an investment of $2,000,000.

Kirchoff & Rose, Milwaukee architects, will shortly close bids for the erection of a new $100,000 plant to be erected by the Phoenix Knitting Co. of Milwaukee at Chicago and Milwaukee streets. The building will be of reinforced concrete, brick and fireproof construction and with stone trimmings. The structure will be six stories high, with basement, 75 by 150 feet in dimensions.

Chicago Situation Normal.

The building material situation in Chicago at the present is one where normal conditions prevail, because of the enforced idleness earlier in the year. Practically, the entire present activity of the market is the result of this accumulation, and from present indications, unless a change for the better soon occurs, when this accumulation wears off, things will quiet down. Great hopes, however, are based on a good fall, and with the expected fair weather conditions, this may be realized.

Paving work has been more or less delayed generally in all localities owing to adverse weather conditions, but recent lettings in Chicago promise lots of this work before the winter sets in and the consequent advantage to the building material men supplying its demand.

To the satisfaction of supply dealers, a number of large loans for building construction have been let in the past few days. Frequent reports of skyscraper construction and an additional postoffice building of large dimensions also tend to make for optimism.

Eastern Outlook Good.

New York, N. Y., Aug.. 19.—One month and a half after the opening of the second half of the year finds practically every building material interest in the metropolitan district holding his products with a tight grip for better demand and better prices. This is partly because building money is easier. Another reason is because of increasing slack supplies at points of production.

Following the second jump in the price of structural steel in this market within a month, other basic building materials began to strengthen. The most conspicuous change was in common brick. This commodity had been selling as low as $5.00 a thousand, wholesale, New York; $5.75 and $6.00 yard, Newark, and at about the same level on Staten Island. Today the New York market price advanced to $5.50 and $5.75, Newark yard prices were reported to have strengthened to $6.00 and upward and Staten Island and Brooklyn prices for Raritan rivers was nearer $6.00 than they had been in some time.

Lime business quickened. Although prices did not actually advance, the $1.55 level was more firmly held and there was less shading, according to reports on the floor of the Building Material Exchange.

All crushed rock products are firmer.

Sand is still quoted at 50 cents, but some business has been done at 45 cents.

Front brick is in better demand in Manhattan than formerly, although the Bronx, where there has been a good movement for some time, is falling away a little.

The architectural terra cotta and fireproofing plants are reporting better inquiry and factories operating at from 40 to 65 per cent of capacity.

The same improvement in inquiry has been reported by the gypsum and general plaster departments, although the market for the former is still in a disturbed condition.

Wood lath is being sold here at $3.75, a fact accounted for by marked improvement in the demand for metal lath, owing to the new fire prevention laws now being promulgated.

Wet weather has weakened Portland cement.

Building construction in prospect is very encouraging. More than $54,000,000 worth of building operations, each costing more than $100,000, are scheduled to go ahead before January 1 in Manhattan alone. Plan filings in greater New York call for an estimated expenditure of approximately $12,000,000 a month. If this average is maintained there will be $124,000,000 worth of new building operations in progress or being figured between now and the opening of the 1916 building season. If only half of that amount actually moves ahead there will still be as much demand for building materials in this market as there was in the fall of 1907, 1908, 1910, 1912 or 1913, and about $11,000,000 more than there was in the fall of last year. Building material interests ought to feel optimistic.

Increased Building in Louisville.

Louisville, Ky., Aug. 19.—Building operations in Louisville showed a nice gain during July, over the permits issued during the corresponding period of 1914. The increase was about $65,000, which was very gratifying to local contractors and building supply men in face of the fact that July was the first month of the year to show a gain.

A. E. Livingston, of the Louisville Builders' Supply Co., states that the company is handling a nice volume of small orders, but that very few big contracts had been handled for some time. Sewer pipe, lime, cement, wall plaster, brick, etc., has all been moving nicely, and no one line has shown up much stronger than another. Collections have been fairly good all summer. The outlook for fall business is considered exceptionally good.

H. H. Frazier, sales manager of the R. B. Tyler Co., reports that he is certainly getting his share of the building supply business just now. He has landed a number of nice brick contracts as well as lime and cement orders during August and is more than satisfied with the outlook for fall business.

Rainy Weather Cripples Business.

Pittsburgh, Pa., Aug. 19.—All retailers have one hard kick to register this summer—about the weather. Suffice it to say that it rained 22 days in May, 17 in June, something like 15 or 20 in July and nearly every day in August to date. This is

All in all, it is probable that the seven months ending August 1st did not produce more than 75 per cent of the business done in the first seven months of 1914. Prices, also, have been very bad. In some lines dealers say that they have been the worst ever. It has been a case of "get the orders at any old price." Profits, therefore, are not in proportion to the amount of business done, however small that may have been in comparison with 1914. The midsummer lull is very much in evidence at present. There is, however, a common feeling among contractors that business is going to be decidedly better in the fall. This is borne out by the big increase in iron and steel business throughout the Pittsburgh district, which is helping to improve general business conditions very much.

Houston Brothers Co. reports general business somewhat better. Most of it is city business and in this building orders take the lead. There is comparatively little street work on hand at present and orders from this source are accordingly few. Prices on sewer pipe are reported by this company to be very low. Cement has gone up about 10 cents in the past few weeks, which looks like better fall business.

Miller & Coulson, along with most other builders' supply dealers, admit that business is not so good as in 1914. Just now the midsummer dullness is felt keenly. Prices show a little change and trade is much better in the Pittsburgh district than in outside points, they say.

D. J. Kennedy Co. report prices bad as ever but a little more business coming forward. Orders are very irregular. Retailers have been forced to buy in the last few weeks in order to fill in their stocks. This company does not expect any boom in business until financial conditions are much improved, for at present banks do not seem disposed to finance building operations and orders from speculative builders are accordingly few.

Knox, Strouss & Bragdon, Northside retailers, report a very fair trade in building supplies. Most of it is new work. Prices are about the same as last year.

Keller Brothers, East End retailers, see no special change in the situation and report a fair demand for supplies. Nearly all of this trade, however, is in building supplies. Wet weather has greatly hindered all business, so that every dry day brings a lot of orders.

HALT TEMPORARY STRUCTURES.

Kansas City, Mo., Aug. 19.—For many years the ordinances and laws regarding the character of buildings that may be erected within the fire limits have been overruled by the means of special ordinances granting permission to erect the kind of building the recipient of the privilege chooses. As a result hundreds of frame structures have gone up in the best residence and business neighborhoods. The board of public works has now attempted to put a stop to the practice and force the erection of substantial buildings, in justice to the owners who have complied with the laws. If the board's orders stick, it will mean a vast difference in the nature of the improvements of the more valuable land in Kansas City.

Building Active at Lincoln.

Lincoln, Neb., Aug. 19.—There is quite a bit of building activity in Lincoln at this time. Throughout the state, however, work has been seriously interfered with this season on account of wet weather, but the Nebraska Materials Co., Lincoln, anticipates the heaviest fall business in its history. In Lincoln a number of attractive jobs are under way or planned for immediate construction.

The Miller & Paine Co. is constructing an eight-story building, 75 by 142 feet for a department store. The firm has just completed an addition five stories high, 50 by 150 feet, and another, two stories, 50 by 142 feet.

The Security Mutual Life Insurance building is being remodeled. It is to be fireproofed and changed from six to 10 stories in height.

The Ganter building has been raised two stories in height.

The Hardy Furniture and Hardware Co. is raising its building two stories.

Paul V. Hyland, architect, of Chicago, Ill., is making plans for a 10-story building, 75 by 142 feet, for the Traction Co.

Carl Boller, architect, Kansas City, Mo., is preparing plans for a new Orpheum theater building, 100 by 142 feet.

Work is progessing on the postoffice addition, which will make the building when completed, a little more than three times its present size.

Contract has been awarded for three new buildings at the University of Nebraska farm. Plans are nearly completed for the two new buildings for the downtown campus.

Contract has been awarded by the board of commissioners of public institutions for the Orthopedic hospital and bids will be taken shortly for another building for the state hospital for the insane.

Cincinnati Market Slow.

Cincinnati, Ohio, Aug. 19.—The advance of the season to this late date has developed the fact that a considerable volume of work is going to be held over to next year, owing to the various conditions brought about by the European war. For the most part, building ventures involving any considerable amount will be held over, as money is certainly extremely conservative this year. On the other hand, it is a fact that small and moderate-priced residence work is going on with a very fair degree of activity, furnishing much the best market for the trade at this time. Reports indicate that there is a good deal of work in the hands of the architects for fall letting, and there is still room for hope that with an open winter there will be plenty to do.

L. H. McCammon Bros. report that their business in the general lines of building material is somewhat ahead of that of last year, which, as they justly view it, is very satisfactory in view of the depressing conditions which have been at work. Sewer pipe and cement have been especially active lines with the McCammon firm lately. The better grades of face brick, however, are somewhat in eclipse, owing to the relatively small amount of high-class building going on, and the predominance of small jobs. The firm looks for a continuance of conservatism, unless the European war comes to a sudden and unexpected close, in which event a marked improvement is expected.

D. C. Shorey, Jr., secretary and treasurer of the Shorey-Willis Brick & Supply Co., agrees to the general report that local business, especially on face brick, is considerably below normal. A pleasing fact, however, is that the common brick plant operated here by the company is running to capacity, turning out 24,000 brick a day, and is sold up for some time to come. Mr. Shorey attributes this activity to the fact that the firm's selling organization devotes a sufficient amount of time to disposing of the common brick as to the other lines, and in consequence is successful in keeping the plant busy.

N. B. S. A.

N. B. S. A.—and the Local Dealer

The National Builders' Supply Association for sometime past has realized the importance and, in fact, the absolute necessity for building material dealers in each locality to organize into local or district committees, operating under the direction of the National association.

In substantiation of the need for this form of organization it must be taken into consideration that the difficulties which may beset a dealer in one part of the country are not encountered by the dealer in another locality, and unless there is some efficient form of organization to take care of these local conditions, it is impossible for a National association in itself to cover the many needs in the direct manner that it should.

Realizing all of this, the N. B. S. A. has started out to put into actual practice what it has long since known to be necessary. The first work of the association along these lines has been commenced in the state of Indiana. At present there are in that state, six district committees, each of which are designated by a number, and are known as District Committee No. —, Indiana Division of the National Builders' Supply Association.

The rules and regulations governing the formation of these "district committees," are as follows:

1. Any firm, person or corporation within the territory of this association, regularly engaged in the building material trade, unless otherwise ordered by the executive committee, and carrying a stock of masons', plasterers', sewer builders', pavers' and other similar building material, reasonably commensurate with the demands of his community, shall be considered a building material dealer and eligible to membership in this association.
2. Membership in the National Builders' Supply Association shall also constitute membership in a "Local District Committee."
3. A "Local District Committee," shall consist of five or more dealers in a territory, which territory shall be designated by the National Builders' Supply Association.
4. The "Local District Committee" shall be organized by and under the direction of the National Builders' Supply Association, on what is known as the credit and promotion bureau plan.
5. Each "Local District Committee" shall elect from its membership a chairman, whose duties it shall be to preside at all meetings held by said local.
6. At the option of the "local," the office of secretary may be included with the duties of chairman, or if desired a secretary may be appointed who shall be present at all meetings and furnish to the general office of the National Builders' Supply Association such reports as may be provided for and perform such other duties as may be required.
7. It is understood and agreed that each "Local District Committee" shall meet at least once each month, and oftener if necessary or found desirable, such meeting place to be designated by the chairman, who shall see that the members of his committee are notified accordingly.

Guided by the rules and regulations as set forth above, the field secretary of the association goes to the city which is selected as the central point for the territory which it is desired to serve, and immediately makes known his proposition to the dealers in that locality.

The proposition, which in itself is nothing more or less than the proposed installation of a central credit bureau, never yet has failed to secure the attention of those approached. Immediately arrangements are made to call a meeting of all of the dealers eligible for membership in that territory. When this has been accomplished and the applications received, each of the members of the committee thus formed are equipped with the necessary blank forms for the use of their bookkeeping department, enabling them to follow out exactly the system as prescribed by the National association. A chairman and secretary of the district committee are also named, and in accordance with the regulations, it is necessary that the chairman arrange for at least one meeting a month of his committee. This monthly meeting is held primarily for the purpose of discussing credit conditions in that territory, as evidenced by the complete report sent to them by the National office, and for the betterment thereof.

Regular blanks are also prescribed and furnished by the association on which the secretary of the committee must report to the National office the proceedings of each meeting. If such reports contain items that might well be taken care of by the National office, it is required of them to do so. The reports also show those in attendance, and enables a close check being kept on all of its activities.

The N. B. S. A. believes that immediately upon the formation of these district committees, the dealers in such committees are enabled to correct conditions in their territory, and to coöperate with similar committees along the same lines. The work has just been started and it will require lots of time and patience to accomplish the results which everyone desires. The beauty of the plan, however, is that the success of one committee does not depend entirely on the immediate formation of similar committees in all localities. Each district is practically self-running and is an effective aid in the furtherance of the work.

The selling policy of the large manufacturers of building material is regulated more or less by the conditions they find in the trade they serve, and just so sure as those trade conditions show themselves to be what the formation of these district committees are bound to make them, so also must the selling policy of the manufacturers follow.

It is to be hoped, therefore, that the present membership of the National Builders' Supply Association, who have not as yet come in contact with this particular branch of the present activity, will continue to remain loyal to its cause. A careful study of organization work will reveal that this is the only logical and effective means of accomplishing results, and the continued support of every member of the N. B. S. A. is now more urgently needed than ever before.

The splendid work of the National Builders' Supply Association is shown in the following list of district committees already organized in the Indiana division:

District committee No. 1, Indianapolis, Ind.; now in process of formation.

District committee No. 2, headquarters, Fort Wayne; territory includes the counties of LaGrange, Steuben, Noble, DeKalb, Whitney, Allen, Huntington, Wells and Adams; chairman, Theo. C. Schwier, of Edward M. Baltes & Co., Fort Wayne, Ind.; secretary, C. E. Ellenwood, Fishack-Ellenwood Co., Fort Wayne, Ind.; members: William Moellering's Sons, Fort Wayne Builders' Supply Co.; Fishack-Ellenwood Co., Trentman Supply Co., Weber & Purviance, E. M. Baltes & Co. The next meeting will be held on Aug. 26 at Hotel Anthony, Fort Wayne, Ind.

District committee No. 3, South Bend, Ind.; territory, counties of St. Joe; Elkhart, La Porte, Starke, Marshall, Kosciusko; chairman and secretary, Walter M. Hildebrand, of Staples-Hildebrand Co.; members: Staples-Hildebrand Co., C. H. DeFrees; A. Smogor & Sons, Samuel C. Lontz & Sons; Builders' Supply & Specialty Co.; Henry Eckler Manufacturing Co., all of South Bend. Also, Herzog & Anderson and Lowe Bros. Lumber Co., of Mishawaka, Ind. The next meeting will be held on Aug. 27 at Hotel Oliver, South Bend, Ind.

District committee No. 4, Lafayette, Ind.; territory includes the towns, Dayton, Brookston, Battle Ground, Chalmers, Romney, Linden, Attica, Otterbein, Buck Creek; chairman, H. B. Lyman, of Lafayette, Ind.; secretary, F. A. Munger, Edward Munger Lumber Co., Lafayette, Ind.; members: Higgins-Anderson Grain Co., Henry J. Kessener Lumber Co., H. B. Lyman, Edward Munger Lumber Co. The next meeting will be held on Sept. 13 at Hotel Fowler, Lafayette, Ind.

District committee No. 5, Logansport, Ind.; territory includes towns within a radius of about 15 miles; chairman, C. L. Dilley, C. L. Dilley Co., Logansport, Ind.; members: M. J. Bligh, C. L. Dilley Co., A. J. Gallion, Phillip Voorhees & Son. The next meeting will probably be held on Aug. 27 at Logansport.

District committee No. 6, Kokomo, Ind.; territory includes towns within a radius of about 15 miles; chairman, John H. Panabaker, Sam Panabaker & Son; secretary, W. O. Bassett, Hansell Coal Co.; members: Ellis Brothers, Hansell Coal Co, Sam Panabaker & Son. The next meeting will be held on Aug. 26 at Hotel Courtland, Kokomo, Ind.

Eastern Dealers Await Joint Meeting.

Members of the various retailers' associations in the East are planning to attend the meeting of the Del-Mar-Col Building Materinl Dealers' Association to be held at the Hotel Westmont, Atlantic City, on Aug. 26 and 27, in large numbers, according to the reports of President B. L. Grove and Secretary J. Grason Steffey, of the Del-Mar-Col association.

As previously announced, retailers from Delaware, Maryland and Washington, D. C., will assemble at the popular resort for their regular quarterly meeting. Upon the invitation of President Grove, the presidents of the six other associations will attend, as will a large number of the members. These organizations will not meet as bodies, but inasmuch as they will be represented by their executive officer the gathering may well be called a joint affair.

Invitations have been formally extended to all of the associations and in turn have been sent to individual members on the part of the various secretaries. The strongest kind of coöperation exists between the seven associations and a joint meeting of this nature should be productive of much good. Already, through the activity of the various presidents, eastern dealers are working most harmoniously with manufacturers in the sale of builders' supplies.

While the coming meeting will be one of the regular quarterly meetings of the Del-Mar-Col association, it will also be celebrated as the first anniversary of that organization's existence. It was on Aug. 4, 1914, that a number of the representative dealers of the two states and the District of Columbia met at the Emerson hotel, Baltimore, and decided to organize for the purpose of bettering their conditions and assimilating knowledge on the manufacture, sale and use of building materials. Adopting the method of holding quarterly meetings, this association has advanced with leaps and bounds until today it numbers among its members the most influential men in the building material business in the district it aims to cover. In the 12 months of its history it has accomplished a great deal for its members, in some instances going into small towns and smoothing out the wrinkles that appear as a result of local competition. The officers of this association are progressive and energetic and to them is due credit for a large share of the benefits accruing to the members.

NEW YARD FOR MILWAUKEE.

Milwaukee, Wis., Aug. 20.—The Elkhart Sand & Concrete Co., of Elkhart Lake, Wis., has opened a new branch retail sand and gravel yard in Milwaukee. The new establishment has been opened at Thirty-first and Center streets and is in charge of P. W. Anton, 1246 Twenty-ninth street. Seven different kinds of sand, gravel, crushed stone and other lines are carried.

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But if you buy a Jaeger Mixer, you are assured of satisfaction and economy. Made of strong, durable materials; with nine years of "mixer" experience built into it, and with a long list of satisfied customers, it is the best value on the mixer market today.

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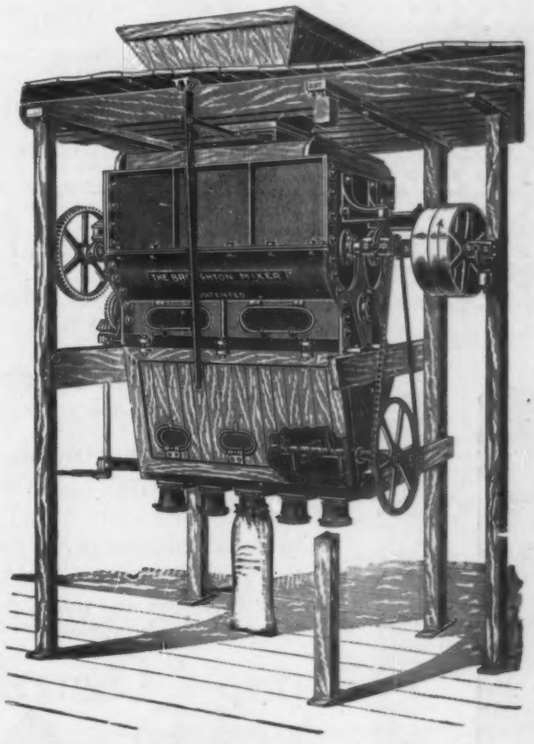

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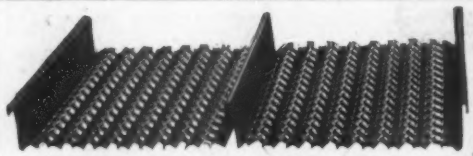

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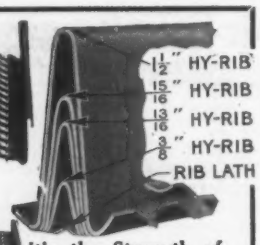

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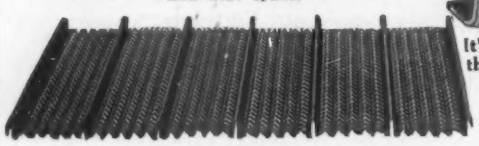
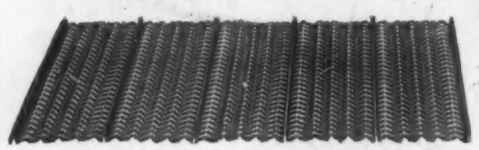


15/16" Hy-Rib for floors and roofs without forms—sidings, partitions, and ceilings without channels.

13/16" Hy-Rib—widely used in partitions, sidings and ceilings.



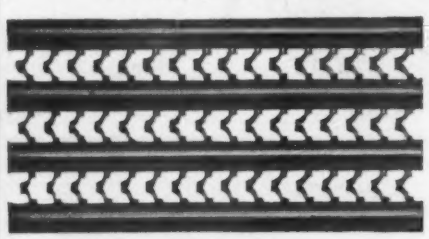
¾" Hy-Rib Lath used as a self-furring lath and in partitions, ceilings, etc., for stud spacings 24" to 36".

The Complete Line for All Dealers and Contractors

Hy-Rib

Roofs
Floors
Partitions
Ceilings
Sidings
Furring

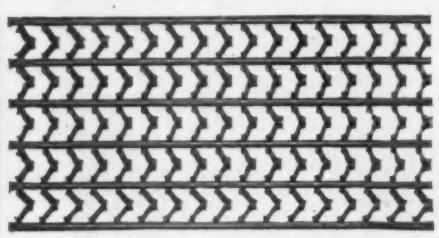
No Forms
No Studs



Beaded Plate Rib Lath—Permits two-coat work instead of three.

Metal Lath

Hy-Rib Lath
Rib Lath
(3 types)
Diamond Lath
(2 types)



Standard Rib Lath in three gauges. Also "B" Rib Lath, similar in design.

Pressed Steel Channels

All types and sizes with and without prongs for Partitions and Ceilings.

Corner Beads

4 Types

Metal Base Screeds

2 Types

KAHN Pressed Steel Channels, ¾", 1", 1½" and 2".

KAHN Pressed Steel Channel Studs, 2", 3", 4", 5" and 6".

Secure all your products from one company—saving time, bother and expense. The best products in each line.

Write for catalogs and estimates

Trussed Concrete Steel Co.

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Representatives in Principal Cities

KAHN Building Products
TRUSSED CONCRETE STEEL CO

Protect Your Walls—

Marvel Window Chutes

protect against coal haulers and burglars. See the wings! What's the use of a pouch, anyway? Safety first. Marvels lock automatically. Heavy and indestructible.

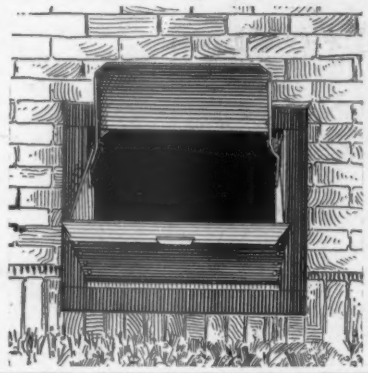
Mr. Material Man: If you are early enough you can have the exclusive agency in your city, and our prices are right. And the individuality of the Marvel Chute makes it easy to sell.

17 x 24, with glass, $9.00

5 other sizes. (A Marvel "Junior" is still cheaper.) Ask for Leaflet "R."

Interstate Mfg. Co.
Oskaloosa Iowa

Your Reputation Is at Stake



In handling coal chutes you must be sure of their quality. If they break or get out of order on the job, the owner's building is damaged and you, Mr. Dealer, are censured for selling poor goods.

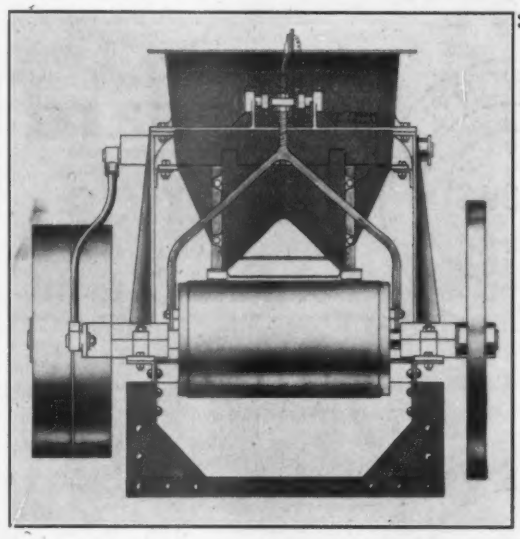
Kewanee

All Steel

Coal Chutes

are guaranteed against breakages. They protect your good reputation and give you a corking good profit.

Kewanee Mfg. Co.
Kewanee Illinois



To weigh and regulate the flow of material traveling in a continuous stream over a conveyor.

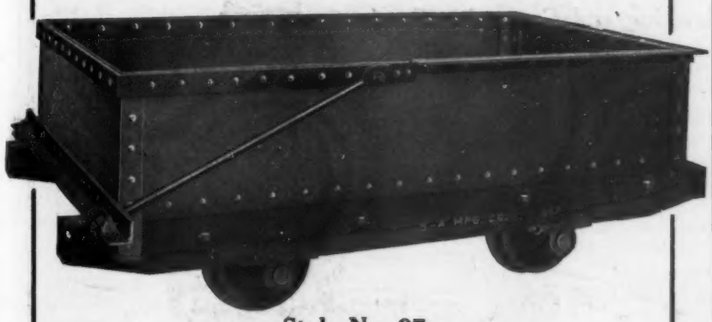
The Schaffer Poidometers

ARE ESPECIALLY ADAPTED FOR

Uniting different materials in correct proportions.
Delivering a predetermined quantity of materials to pulverizing or grinding machinery.
Feeding crushed coal to boilers.
Loading materials into cars or vessels and giving a record of the quantity loaded.

The Schaffer Eng. and Equip. Co.
TIFFIN, OHIO

"S-A" Quarry Cars and Friction Hoists

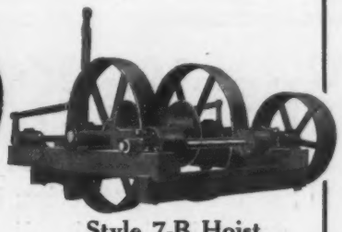


Style No. 97

This is a car of simple design and heavy rugged construction for quarry service. It is mounted on heavy oak sills. The wheels are 14 inches diameter, with chilled tread carried on 3-inch axles. The side plates are ¼-inch, and $\frac{5}{16}$-inch plate is used for the bottom.

The end gate is hinged near the center of the car so that it remains closed without latching. It is opened by means of the projecting angle, which strikes guide rails suitably arranged at the dump.

Style 7-A Hoist



Style 7-B Hoist

We build these hoists for use in gravel and stone crushing plants, clay plants, etc., for hoisting loaded cars up the incline from any part of the quarry. By releasing the lever the cars are immediately returned down the incline for reloading. Perfect control is secured by the friction brake.

LET US SUBMIT PLANS AND SPECIFICATIONS TO MEET YOUR REQUIREMENTS

Stephens-Adamson Mfg. Co.

Aurora, Illinois

New York Chicago Pittsburgh Boston St. Louis
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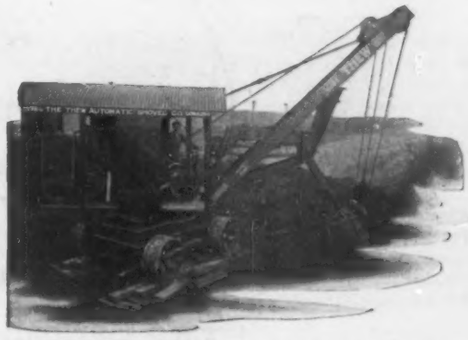
We design and manufacture conveying machinery for rock crushing plants, gravel washing plants, storage systems, etc. Also transmission and screening equipment, elevators, gates, feeders, car pullers.

THEW SHOVELS

20 to 30 Cents an Hour for Fuel--

But One of the Advantages of the Thew Gasoline Shovel



Type O THEW Gasoline Shovel—¾ yard dipper

THIS shovel has the horizontal crowding motion, prying motion, swivel motion of dipper, and full circle swing feature, which are standard with all Thew Shovels; the only difference being in the kind of motive power.

It requires no fireman, is operated by one man, and demands no licensed engineer.

The cost of operating is particularly low, as only 20 to 30 cents' worth of gasoline is consumed per hour; there is no expense for hauling coal, for boiler insurance, or boiler upkeep, and no time is wasted in getting up steam, banking fires, or blowing off boiler.

Complete advantages of this new shovel are explained in a new circular which will be sent on request.

Sign and Mail or Use for Memorandum

The Thew Automatic Shovel Company
Lorain, O.

Send special circular and inform us of other advantages of the gasoline shovel advertised in Rock Products.

Name .....

Address .....

THE THEW AUTOMATIC SHOVEL CO. LORAIN OHIO

EVIDENCE BY THE CARLOAD

REXALL DOUBLE-STITCHED BELTING

The Most Efficient Belt for Elevating and Conveying Service

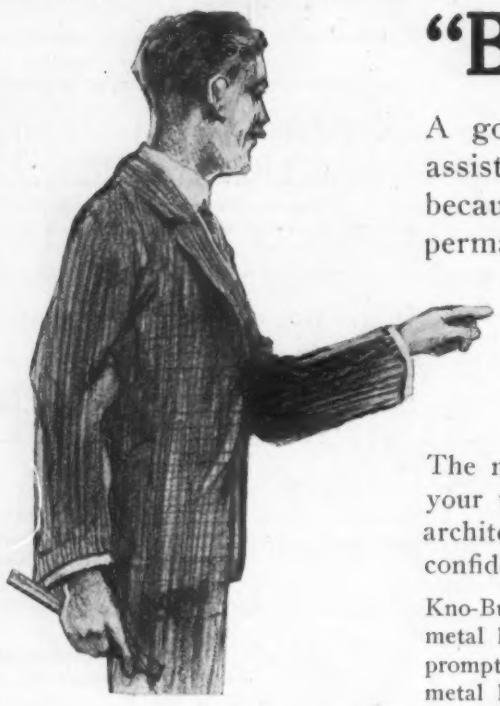
Two Carloads Rexall Belting Total Weight 80,000 Lbs. Total Length . 2 Miles

The Most Complete Belt Stock in the United States

IMPERIAL BELTING CO.

CHICAGO, ILL. DEPT. "GL"

We Carry REXALL in 1000' Rolls from 1" to 42" Wide



"Better Specify Kno-Burn"

A good many of your local architects say just that to their assistants whenever metal lath construction is to be used. This is because architects in general place implicit confidence in the permanence of

Kno-Burn
Expanded Metal Lath

The most satisfactory metal lath for you to sell, Mr. Dealer, is the lath that your trade knows and likes. We have educated them to "Kno-Burn"—architect, contractor, house owner. Are you "cashing in" on their confidence?

Kno-Burn Expanded Metal Lath comes in 56 styles—completely covering the field of metal lath construction. You don't have to carry a big stock because we can ship promptly from our nearest warehouse. We are the largest exclusive manufacturers of metal lath and steel reinforcing in the world.

Send at once for Booklet 293, containing complete data as to prices, styles and weights.

North Western Expanded Metal Co.

929, 407 So. Dearborn St., Chicago, Ill.

CONCRETE

Foundation of New Fish Market in Holland.

BY W. BROUERIUS MEYBROOM, C. E.

At Ymuiden, Holland, one of the greatest fishing ports in the world, a new fish market has been built at the seashore. The foundation is a specimen of modern concrete pile construction. The ground into which the concrete piles have been driven consists principally of sand, mixed with peat. The reinforced concrete piles are prismatical in shape, having a minimum concrete section of 232.5 inches,

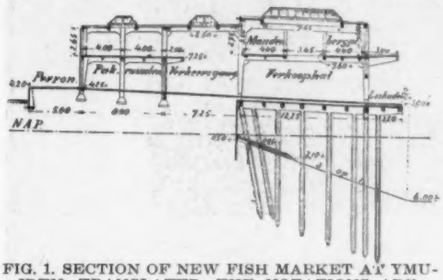


FIG. 1. SECTION OF NEW FISH MARKET AT YMUIDEN, TRANSLATED, THE NOTATIONS ARE: MANDEN BERGPL., STOREROOM FOR BASKETS; VERKOOPHAL, SALES ROOM; LOSKADE, QUAY; PAKRUIMTEN, PACKING ROOM; VERKEERSGANG, PASSAGE; PERRON, PLATFORM; N. A. P., LEVEL OF THE SEA.

therefore the contractor chose an octagonal section of a circle of 17.5 inch diameter (Fig. 2). The length of the piles varies between 35 and 49 feet. The reinforcement of the poles has been made spirally wound over a set of bars.

The concrete for the piles, as well as that used for the other construction parts exposed to sea water, has been mixed as follows: One part Portland cement to one and one-half part sand and one and one-half part gravel. According to the contract the concrete has to be rammed into the forms when 20 feet under the ground and then driven in by machine. Owing to the softness of the soil each pile was calculated to bear only a weight of 25 tons. In order to protect the piles against sea water each pile was given two coats of coal tar paint. By dissolving the tar in benzol it was made to dry hard very quickly.

It was specified in the contract that every pile must harden 15 days before the first coat of coal tar was allowed to be put on. After 10 hours' drying the second coat could take place, and finally the paint had to dry 48 hours after this second treatment before it could be used.

The transportation of the heavy concrete piles, which weighed 6,000 kilograms (13,200 pounds), caused great difficulties, as the workmen had to be very careful that the piles did not ravel or check in transit from the yard to the water. Many piles were driven right down in the sea to carry the quay constructed on the building, where trawlers can discharge their cargo.

To drive these heavy concrete piles into the ground a special driving machine, constructed by Ernst Halbach, of Dusseldorf, Germany, was ordered. The rammer of this engine weighs 4,000 kilograms (8,800 pounds). Experience has taught that when driving reinforced concrete piles into the ground, good results can only be obtained with a very heavy rammer, dropping but a very short distance. None of the concrete piles was damaged in the operation.

The floor of this ideal fish market, resting for the greater part on the piles, is composed of reinforced concrete slabs, carried on adequate beam and girder frame.

For a fish market, the construction and design may be called ideal. The steam trawlers discharge their cargo right at the quay of the building, in which large packing rooms have been provided.

Railroads cars run alongside the building.

Make Records in Placing Concrete.

Victoria, B. C., Aug. 16.—Two new records were established by the contractors for the Victoria, B. C., breakwater, Sir John Jackson, Ltd., during the month of June. A total of 8,815 tons of granite blocks had been placed in position under the supervision of the divers, and 2,042 cubic yards of concrete, comprising six blocks, each weighing 700 tons (the length of the section being 150 feet), was laid within the past month's operations. In no previous month has such an amount of granite blocks and reinforcement concrete been deposited within a given time. The month's work has resulted in the concrete superstructure being pushed seaward to the extent of 150 feet.

Remarkable progress is also reported in connection with other sections of the contract. During the past month the contractors dumped 24,713 tons of rubble, placed in position 8,815 tons of granite blocks, and poured 2,042 cubic yards of concrete. The grand totals as compiled since the contract was taken in hand are as follows: Rubble dumped, 659,154 tons; granite blocks placed in position, 51,228 tons, and amount of concrete poured, 11,942 cubic yards.

Grant, Smith & McDonnell, contractors for the new Government piers, also report much progress during the past month. In excavation operations for the foundations of the cribs, a total of 16,416 cubic yards of material was displaced. A total of 5,330 tons of rubble was dumped, and 1,617 cubic yards of stone for surfacing was deposited. On the two cribs now in position, 679 cubic yards of material was used, and 21,607 cubic yards of material for the back filling of the cribs was placed. The grand totals of the rubble dumped since the operations started is placed at 354,688 tons, and the amount of back-filling at 25,475 cubic yards.

Within the month another crib was completed on the ways at Esquimalt, B. C., and will be launched as son as the ways are completed, which is expected very shortly. The work of pouring the walls for the fourth crib was completed late in July, while the work of pouring the floor of the fifth crib was started and finished on the same day. Steel is now being placed in position preparatory to pouring the walls of the fifth crib, and by the time the ways are complete it is probable that the three cribs will be ready for launching.

This work is in conjunction with the program of the Dominion Government, whereby they are spending nearly $3,000,000 on harbor improvements at the Pacific coast.

Many of the counties of Texas have adopted the low type of concrete bridge in the construction of crossings of the smaller streams. These bridges overflow in time of rises but as the water usually subsides quickly the structures are impassable for brief periods only, and they possess the advantage of being practically immune against wash-outs.

$3,000,000 Dry Dock Almost Completed.

According to recent despatches, the big floating dry dock at Prince Rupert, B. C., together with its plant, foundry and machine shops, is about ready for operation. Prince Rupert now has on its harbor front the finest dry dock on the Pacific coast. The cost of the undertaking will be approximately $3,000,000 when completed.

The dock consists of three units, with a total capacity of 20,000 tons. There will be two end sections of 5,000 tons each and a middle section capable of holding a vessel of 10,000 tons. All the units are interchangeable and each dock is complete in itself, with pumps and air compressors. If necessary, all three sections, or units, could be joined to hold a vessel 600 feet long and weighing 20,000 tons.

In addition to the actual dock there are four other parts, which will be able to make castings as heavy as 12 tons; a boiler shop for marine repairs, as well as the construction of boilers; a machine shop, which is equipped, among other things, with a lathe having a 72-inch head, a ship shed and carpenter shop, 160 x 300 feet, and a power house equipped with two large turbo-generators and a 15,000-foot air compressor. The work of construction in connection with the dry dock and its accompanying plant has been under way since 1912, and the builders will soon be replaced by a staff of operators.

CONCRETE WATER METER BOXES FOR DALLAS.

When the city commission of Dallas, Tex., recently awarded the contract for the construction and placing of 12,500 concrete water meter boxes to the Dallas Foundry Co., a new epoch in the use to which concrete material may be put was inaugurated for that city and perhaps for other municipalities of the country. The meter boxes are to cost the city $1.10 each. It is claimed by local authorities who made a careful investigation of the concrete type of meter boxes that they possess important advantages over the metal boxes that are now in general use in different cities. The concrete boxes should never need replacing. All cut-off valves will be placed inside the boxes, instead of in separate boxes as heretofore. The tops of the boxes will be kept locked so that consumers cannot tamper with the meter or cut-off.

It is predicted by the advocates of the concrete water meter box that the time is not far distant when the United States postoffice department will adopt concrete for the construction of all mail-collecting boxes. It would be an enormous saving to the government in the long run, it is claimed.

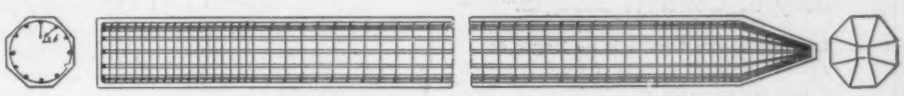


FIG. 2. PRISMATIC CONCRETE PILES USED IN H OLLAND FOUNDATION WORK.

SOLDIERS' MONUMENT OF CONCRETE.

Plans are complete for a soldiers' monument to be erected in the cemetery at Garden City, Kan. The plans were made by Mr. Gillig, supervising architect on the government building.

The monument will stand on a base 20 feet square and three steps will lead up to it. From this the shaft will rise 20 feet. The finish will be of cement and crushed granite, so that it will look like a granite monument. On two sides copper tablets will be inserted, containing the name of the soldier dead. At the four corners will be terra cotta or cement urns for flowers, and surrounding the whole will be a curbing, inside of which grass will be planted.

Uses Cement for Sculpture.

Cement for sculptural purposes is being adopted as the working medium of many artists who have found its soft, pliant mass easily adaptable to their requirements. The method adopted in the past seems to have been almost entirely the employment of molds, and the departure of Herman Grass, of Chicago, who is of German art education, is unique because of its comprehensiveness as applied to the demands which may be made upon it.

While such articles as fountains, urns, vases, garden furniture, etc., are manufactured by Mr. Grass in the usual way, yet he has found a wider field in the form of cement animals and other types of sculpture which are produced by the bending of fine-

ODD BACHELOR QUARTERS AND STUDIO.

mesh wire to as nearly the desired shape as possible, over which is applied the cement. In this manner lifelike reproductions of various objects are modeled and finished by the touch of the artist's hand. Such examples of sculpture have been marketed by the designer in New York and St. Louis and are finding a ready acceptance in Chicago and vicinity.

Mr. Grass recently erected a residence by his own labor which is constructed chiefly of cement products and in which is his studio, largely filled with odd creations in cement. There are also a number of oil paintings produced on canvas by the brush of the versatile artist. The studio, which is illustrated on this page, is located on Irving Park boulevard, on the Northwest side.

Economy of Concrete Bridges.*

It can be easily shown that it is no longer economical to build temporary bridges of wood or steel except for unusual locations and conditions. Assume, for example, that a 50-foot bridge of a temporary character costs $1,000, and that the amount is borrowed at 5 per cent interest. Assume also that the life of the bridge will be 25 years—the average life of a steel highway bridge—and that the bridge will require reflooring at intervals of five years, and repainting at intervals of eight years. Then, for the 25 years, the maintenance cost will be as follows:

Interest charge, 25 years at $50....	$1,250
Reflooring four times, at $100.....	400
Repainting twice at $50.....	100
Maintenance for 25 years.....	$1,750

This is at the rate of $70 per year. The original loan of $1,000 still remains unpaid, but an additional loan of $1,000 must be made to replace the bridge. Hence, for the next 25 years, the maintenance will be increased by the interest on the second note, making $120 per year. For the third 25 years, the cost will reach $170 a year, with $3,000 borrowed; and at the end of a century, the maintenance will be $270 per year, with $5,000 owing on notes.

If, instead, a permanent bridge had been built, all of the maintenance for the first 25 years might have been expended for interest, making a loan of $1,400 possible at the same cost per year, and this would never need to be increased. That is to say, it would be economy, even for the first 25 years, to pay 40 per cent more for a permanent bridge. And, if a sinking fund were established to meet the notes at the end of each 25 years, about $26 per year additional would be required, making the maintenance charge $96 per year. So that under the above conditions, a permanent bridge would be worth 92 per cent more than the temporary bridge above described.

*Extract from an address by D. B. Luten before the Kansas Engineering Society.

Inexpensive and Picturesque Arbor.

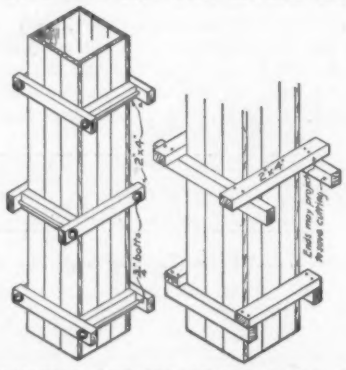
The attractive arbor shown in the picture below is so simple and easy to construct that it should appeal to farmers who are interested in making their premises beautiful as well as profitable.

The arbor consists of four octagonal cinder-concrete columns surmounted by undressed timber. It was built by J. Fletcher Street, a Philadelphia architect, at his suburban home in Beverly, N. J.

To construct the columns required three cubic yards of cinders and three barrels of cement. The work was done by one man in four days. The mixture, however, is too lean and unsafe for the unskilled worker to use, and the proper proportions of cement, sand and stone are given below.

The arbor is eight by 12 feet. The columns are seven and one-half feet high, two feet at the base and 18 inches at the top. Each has a foundation of concrete two feet six inches each way—in other words, a concrete cube of that dimension. A square form of boards was erected and corner pieces inserted to form the octagon. It was intended to give the columns a finishing coat of plaster, but they looked so well in their crude state that it was never applied.

Simple designs of this type compare favorably with the most costly and ornate conceptions, and are made at greatly reduced cost. Had the columns shown been elaborate in design and surmounted with dressed timbers it is questionable whether the arbor could have been built for less than $100.



CONSTRUCTION DETAILS OF FORM FOR CASTING CONCRETE COLUMNS.

Moreover, many people of good taste would prefer the more rude and simple patterns. These columns take their place in the landscape with the unobtrusiveness of a tree, while their rough surface is better adapted to the growing of vines than columns possessing a smooth surface. In fact, the columns on the world-famous terrace at Amalfi are even more simple than these octagonal forms.

Two types of forms for constructing columns are shown in the line drawing. The form at the left is the more economical where it is the purpose to use it many times, but for a single operation, such as the arbor described, the form at the right with braces nailed instead of being fitted with bolts would be more economical.

The concrete could be mixed in the proportion of one part Portland cement, two parts sand and four parts stone or screened gravel, as cinders are not always available on the farm. It is important to remember that cinders do not mean ashes, so it would be better to use the stone or gravel.

Concrete for Permanence.

In one of its booths at the recent Chicago Cement Show the Universal Portland Cement Co.

CONCRETE ARBOR AT BEVERLY, N. J.

showed sections of concrete from the foundations of the Temple of Romulus, Palatine Hill; the foundations of an out-door theatre in Fiesole, near Florence, Italy; a wall in Pompeii, showing colored pigments used in decoration, still brilliant and intact after 2,000 years wear; a concrete block from a residence built in 1880 in Columbus, Ohio; a keystone from the Franklin-MacVeigh building, Chicago, built about 1875 and wrecked in 1914; a faced block of Hydro-stone, made in 1906, showing how little effect weathering has on a washed granite faced block; a spindle made in 1907 by the Stevens process and turned in a stone lathe; a piece of natural concrete known as Roxbury conglomerate, dating back to antiquity, perhaps millions of years. This is formed of gravel, sand and a cementing material not unlike Portland cement in effect.

Of less historical interest but of equal value in showing the permanence of concrete, particularly as regards its resistiveness to acid actions, are four sections of concrete sewer pipe from Bay City and Saginaw, Mich, and South Bend, Ind., and a piece of outfall sewer from San Diego. These sections vary from 30 to 50 years in age.

Resistance to weathering, sea action and abrasive action are shown in the sections of a street crossing laid in a North Dakota town in 1864 and used continuously for 30 years, a concrete block with granite facing subject to about 10 years of weathering, a cube of concrete for shore protection made by the French in 1884 when they were working on the Panama Canal and a section of a concrete pier from Nova Scotia, cast in 1886 and subjected to tide and sea water action since that time.

The Concrete Flooring Co., Newport, Ky.; capital, $50,000; incorporators, Fred A. Dole, Fred C. Evers, Gus Sauer and Henry Schroeder.

ROAD BUILDING

Proposed Standard Definitions of Road and Pavement Materials.

The following definitions of road materials were submitted by committee D-4 on standard tests for road materials at the eighteenth annual meeting of the American Society for Testing Materials:

Bituminous Materials.—Asphalts.—Solid or semi-solid native bitumens, solid or semi-solid bitumens obtained by refining petroleum, or solid or semi-solid bitumens which are combinations of the bitumens mentioned with petroleums or derivatives thereof, which melt upon the application of heat, and which consist of a mixture of hydrocarbons and their derivatives of complex structure, largely cyclic and bridge compounds.

Asphaltenes.—The components of the bitumen in petroleums, petroleum products, malthas, asphalt cements and solid native bitumens, which are soluble in carbon disulphide, but insoluble in paraffin naphthas.

Blown Petroleums.—Semi-solid or solid products produced primarily by the action of air upon liquid native bitumens which are heated during the blowing process.

Carbenes.—The components of the bitumen in petroleums, petroleum products, malthas, asphalt cements and solid native bitumens, which are soluble in carbon disulphide, but insoluble in carbon tetrachloride.

Cut-Back Products.—Petroleum or tar residuums which have been fluxed with distillates.

Tars.—Bitumens which yield pitches upon fractional distillation and which are produced as distillates by the destructive distillation of bitumens, pyrobitumens or organic materials.

Coal Tar.—The mixture of hydrocarbon distillates, mostly unsaturated ring compounds, produced in the destructive distillation of coal.

Coke-Oven Tar.—Coal tar produced in by-product coke ovens in the manufacture of coke from bituminous coal.

Dehydrated Tars.—Tars from which all water has been removed.

Gas-House Coal Tar.—Coal tar produced in gas-house retorts in the manufacture of illuminating gas from bituminous coal.

Oil-Gas Tars.—Tar produced by cracking oil vapors at high temperatures in the manufacture of oil gas.

Pitches.—Solid residues produced in the evaporation or distillation of bitumens, the term being usually applied to residues obtained from tars.

Refined Tar.—Tar freed from water by evaporation or distillation which is continued until the residue is of desired consistency, or a product produced by fluxing tar residuum with tar distillate.

Water-Gas Tars.—Tars produced by cracking oil vapors at high temperatures in the manufacture of carburetted water gas.

Normal Temperature.—As applied to laboratory observations of the physical characteristics of bituminous materials, is 25° C. (77° F.).

Solid Bituminous Materials.—Those having a penetration at 25° C. (77° F.), under a load of 100 g. applied for 5 seconds, of not more than 10.

Liquid Bituminous Materials.—Those having a penetration at 25° C. (77° F.), under a load of 50 g. applied for 1 second, of more than 350.

Semi-Solid Bituminous Materials.—Those having a penetration at 25° C. (77° F.), under a load of 100 g. applied for 5 seconds, of more than 10, and a penetration at 25° C. (77° F.), under a load of 50 g. applied for 1 second, of not more than 350.

Flux.—Bitumens, generally liquid, used in combination with harder bitumens for the purpose of softening the latter.

Asphalt Cement.—A fluxed or unfluxed asphalt specially prepared as to quality and consistency for direct use in the manufacture of bituminous pavements, and having a penetration at 25° C. (77° F.) of between 5 and 250, under a load of 100 g. applied for 5 seconds.

Straight-Run Pitch.—A pitch run to the consistency desired, in the initial process of distillation, without subsequent fluxing.

Native Asphalt.—Asphalt occurring as such in nature.

Consistency.—The degree of solidity or fluidity of bituminous materials.

Artificial Asphalt.—Recommended that the use of term be discontinued.

Road Asphalt.—This is a trade term not subject to definition.

Liquid Asphalt.—This is a trade term not subject to definition.

Non-Bituminous Materials.—Chert.—Compact siliceous rock formed of calcedonic or opaline silica, or both.

Crusher-Run.—The total unscreened product of a stone crusher.

Granite.—A granitoid igneous rock consisting of quartz, orthoclase, more or less oligoclase, biotite and muscovite.

Granitoid.—A textural term to describe those igneous rocks which are entirely composed of recognizable minerals.

Matrix.—The binding material or mixture of binding material and fine aggregate in which the large aggregate is embedded or held in place.

Rubble.—Rough stones of irregular shapes and sizes, broken from larger masses, either naturally or artificially, as by geological action, in quarrying, or in stone-cutting or blasting.

Soil.—A mixture of fine earthy material with more or less organic matter resulting from the growth and decomposition of vegetation or animal matter.

Stone Chips.—Small angular fragments of stone containing no dust.

Tailings.—Stones which, after going through the crusher, do not pass through the largest openings of the screen.

TEXAS GOOD ROADS ASSOCIATION MEETS.

A joint meeting of the Texas Good Roads Association and County Judges' and Commissioners' Association was held at the Agricultural and Mechanical College of Texas, College Station, Texas, Aug. 5, 6 and 7. The program included a number of inspection trips, moving pictures showing road construction methods, an exhibit of road machinery and materials, a demonstration of bituminous macadam and gravel roadways and concrete sidewalks, and papers and discussions on road laws, convict labor, highway legislation, maintenance, etc.

ROAD PRESERVATION BULLETIN.

The United States Department of Agriculture, under the direction of Logan Waller Page of the office of public works, has just issued bulletin No. 257, consisting of progress reports of experiments in dust prevention and preservation during 1914.

Program of Pan-American Road Congress.

The advance program of the Pan-American Road Congress outlines the work to be followed at the 10 sessions, which will be held at the Municipal Auditorium, Oakland, Cal., from the morning of Monday, Sept. 13, until the afternoon of Friday, Sept. 17.

The congress is to be held under the auspices of the American Road Builders' Association and the American Highway Association, acting jointly. These two great national good roads associations have heretofore held separate annual conventions. Assistance in details on the Pacific slope will be rendered by the Tri-State Good Roads Association and the Pacific Highway Association.

The first session, Monday morning, will be taken up by the opening exercises. The opening address will be by Governor Gates, of Vermont, chairman of the executive committee; addresses of welcome will be made by Governor Johnson, of California; Mayor Davis, of Oakland, and Director of Congresses Barr, of the Panama-Pacific Exposition. Responses will be made by President Tillson, of the American Road Builders' Association, and President Harrison, of the American Highway Association.

Six educational addresses are scheduled for Monday afternoon. Both morning and afternoon sessions on Tuesday, Wednesday and Thursday, and that of Friday forenoon, will be devoted to the presentation and discussion of papers for bringing out the latest and most approved ideas in road and street construction and maintenance. Friday afternoon will be given to committee reports, business and resolutions.

The program schedules 21 papers open to discussion. They have been prepared and the discussions will be led by men well known in road building circles, and the committee has endeavored, so far as possible, to assign to each the subject which is within the scope of his greatest activity. In this way the most complete information may be brought out. After the paper on any subject has been presented and the discussion opened by the person selected, remarks will be in order by anyone interested in the subject.

Will Go by Special Train.

A special official train has been arranged, under the direction of J. Edward Eager & Co., of Baltimore, Md., which will leave Chicago Sept. 2, and arrive at Oakland Sept. 12. The men who will travel to the coast on the Pan-American Road special will assemble at the Blackstone Hotel, Chicago, on Thursday, Sept. 2, and leave at 6:45 p. m. The train will go over the C. & N. W. railway to St. Paul, over the "Soo" line to the Canadian border and then over the Canadian Pacific, through the Canadian Rockies to Vancouver, and to Seattle. The trip thence to Oakland will be over the Northern Pacific and Southern Pacific railroads. Stops will be made for visiting points of interest throughout the entire trip. The headquarters of the Pan-American Road Congress are at 150 Nassau street, New York City.

The annual meeting of the American Highway Association will be held in the Auditorium, Oakland, Calif., on Thursday evening, Sept. 16, at 7 o'clock, for the purpose of electing officers and directors for the ensuing year and for the transaction of other business.

CEMENT

Per Sack vs. Per Barrel.

The standard specifications for Portland cement, under general conditions, provide:

"A bag of cement shall contain 94 pounds of cement net. Each barrel of Portland cement shall contain four bags * * *."

The 400-pound barrel originated at the time when all of our Portland cement came from abroad and was actually packed in barrels. When we began to make Portland cement in this country we put it up in barrels weighing 400 pounds gross. Later, when, as a matter of package conservation, we began to put it up in sacks, we ascertained the net weight per barrel and divided it by four.

As will be seen from the specifications, the official unit of quantity is the bag or sack which must contain 94 pounds of cement. This being the standard unit of quantity as well as the unit in which nearly all cement is actually handled, why not make our prices, contracts, invoices, bill of lading, etc., read sacks or bags instead of barrels? In other words, why not price cement in cloth 35 cents per sack gross instead of $1.40 per barrel gross, and in paper 27½ cents per bag gross, instead of $1.10 per barrel gross?

In tracing a quantity of cement from the time a quotation is made until the empty sack has been returned, it will be seen that the figures are frequently converted from barrels to sacks, and sacks to barrels.

A price is made and accepted. The order calls for barrels, but when it is sent to the mill barrels are converted into sacks and sacks are loaded into the car. In making out the invoice, however, the sacks are converted into barrels but when the consignee receives the car he converts the barrels on the invoice to sacks to check out the contents of the car. When the dealer's customer buys 10 barrels of cement his order is converted to sacks and 40 sacks are delivered but in invoicing the material the sacks are converted into barrels and the invoice calls for 10 barrels. The customer then changes this to sacks to make it correspond with the actual delivery.

When the sacks are emptied the word "barrel" seems to get out of our vocabulary and instead of calling "four empty sacks" "one empty barrel," the sacks are called by their right name.

Why should not prices, orders, contracts, invoices, bills of lading, etc., correspond with our goods? This change may seem quite formidable and it would involve a change in the habit of thought of some people, principally the manufacturers of cement, but against the inconvenience of a few hundred people, we will have the convenience of hundreds of thousands of engineers, architects, inspectors, dealers, contractors, bookkeepers, clerks, farmers, teamsters, etc.

Universal Exhibit at the Exposition.

The exhibit of the Universal Portland Cement Co. at the Panama-Pacific Exposition illustrates in models, paintings and pictures a number of the more important uses of concrete. At the rear of the display a massive facade with arches six feet in depth rises 24 feet above the floor. Within the arches are hung large oil paintings, brilliantly illuminated, picturing four main branches of concrete construction.

Through the first arch one may see a modern farm, where concrete has provided the farmer an enduring building material from which to construct his house, his barn, his silo, his feeding floor and what-not. Concrete is particularly adaptable for the farmer because its use does not require the knowledge of a skilled mechanic. The farmer, being a jack-of-all-trades and a natural inventor, has quickly developed the possibilities of concrete to their fullest extent.

Through the next arch one looks out along a country road, but not the dusty, rutted or muddy road of our forefathers. The road in the second picture is the modern road—the clean, permanent, dustless concrete road, built for ages and not alone for the day.

"Concrete for the Home" is the title of the picture in the third arch. Concrete has given to the home builder a material from which to construct an attractive and comfortable home, warm in winter, cool in summer.

"Concrete for Factories" is the subject of the fourth painting. Concrete assumes important dimensions in its application to factory construction. Concrete buildings are fireproof and sanitary. The providing of clean, healthful surroundings with protection from fire.

Within the central arch of the facade is built a working model of the company's plant No. 5, at Universal, Pa., 25 miles from Pittsburgh. It is a very interesting model and shows the plant at daybreak with loaded freight cars being drawn back and forth, dump cars on the high-line entering and leaving the stock house with their loads of slag and limestone, and traveling cranes conveying the clinker from the clinker storage pit to the finishing mill. The scene gradually changes to sunset and to night. The mills and office buildings light up and the rotary kilns become visible, burning their contents of slag and limestone into a hard clinker.

The reception booth of the exhibit is a reproduction, two-thirds size, of a portion of a factory building at Piqua, Ohio. The surface of the concrete in this factory building has been given a bush hammered finish, which suggests a way of making attractive what might otherwise be very uninteresting expanses of concrete.

A model of a concrete fire escape is exhibited, such as is constructed within the walls of an Indianapolis factory building, showing the latest development of fire escape practice.

One of the greatest boons to the farmer today has been the silo, in which he may store up and preserve green, succulent food against the summer droughts and winter months. Concrete has proven itself very adaptable for silo building and is widely used. A model of the concrete silo is exhibited in which a portion of the wall has been removed to show the method of reinforcement.

The decorative possibilities of concrete are almost unlimited. The architect and landscape gardener have begun to realize how easily concrete adapts itself to their general scheme of decoration. Concrete railing standards, concrete flower boxes and lighting standards have been used in the exhibit to bring out this characteristic.

The exhibit is given in conjunction with that of other subsidiaries of the United States Steel Corporation, F. H. Cann being in charge.

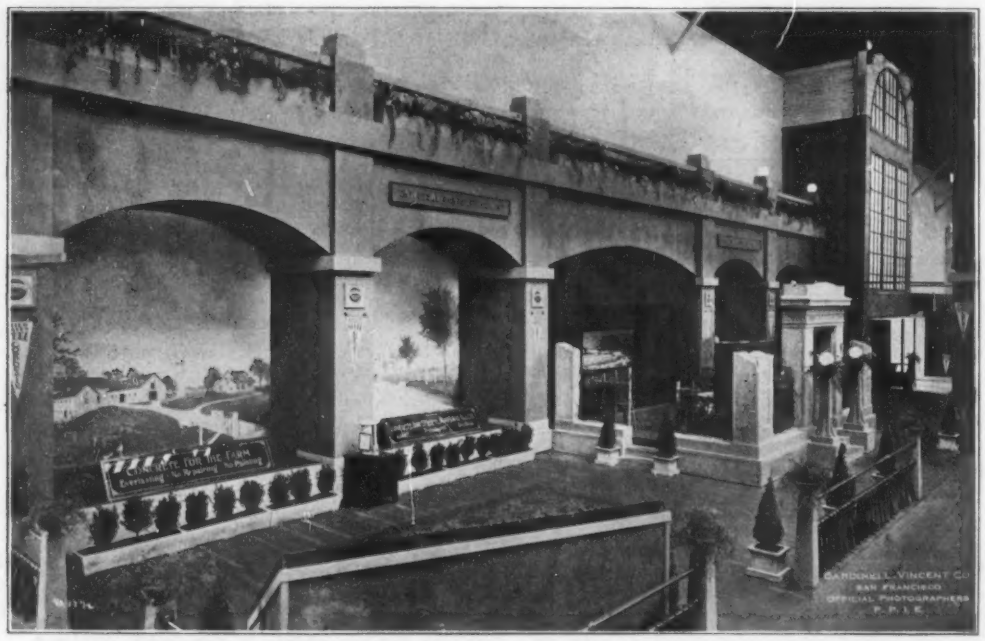


EXHIBIT OF THE UNIVERSAL PORTLAND CEMENT CO. AT THE PANAMA-PACIFIC INTERN ATIONAL

WINS TRADE-MARK CASE.

The Marquette Cement Mfg. Co., Chicago, Ill., recently had an experience in Uncle Sam's trade-mark bureau with regard to the registration of a trade-mark. The Marquette company devised as a mark a tag which was a strip of material of zigzag or irregular form. The examiner of trade-marks refused to register it on the ground that nobody should be given a monopoly of such a tag. The Marquette concern answered with the contention that it was distinctive and won out before the higher authority at the patent office.

In deciding in favor of the cement company the interesting point was made that if the shape of the tag could have any utility other than to point to ownership or origin, the firm could not get a monopoly under the guise of a trade-mark, but if the shape could have no utility but to denote origin then the peculiar shape could be monopolized.

New Power Plant Will Soon Be Built.

Work for the restoration of power at the plant of the Knickerbocker Portland Cement Co., Hudson, N. Y., is being carried on with all possible speed, according to Harvey H. Ward, sales manager. He states that the catastrophe which visited the plant on Aug. 2 sunk the power plant and several acres adjoining approximately 20 feet, completely wrecking the building, but in no way injuring the remainder of the plant. Lack of power alone prevents the immediate resumption of full operation.

Arrangements have been made with the Alpha Portland Cement Co. to supply Knickerbocker customers with Alpha Portland cement together with the Knickerbocker product on hand. Announcements have been sent to the trade stating this fact and explaining that while the accident legally excuses the company from obligations to carry out contracts, a desire exists to continue shipments without interruption.

The accident which occurred at six o'clock in the morning, caused the complete collapse of a steel-frame brick power house, a 170-foot reinforced concrete smokestack and the sinking of a 40,000-ton pile of crushed rock from a height of nearly 40 feet, almost to a level with the original surface. A square concrete elevator tower nearly 40 feet high is now leaning at a sharp angle and is half buried by the stone around it. Five men lost their lives in the boiler house and four others were badly injured by being caught in the debris and burned by escaping steam.

According to D. W. Newland, assistant New York state geologist, the plant of the Knickerbocker company is built on a clay terrace which marks the bottom of an old glacial lake, 200 feet above tide. The clays at this point are probably 50 feet or more in thickness and are the characteristic blue plastic clays that are used along the Hudson river for brick. The clays are underlaid by shales which are solid and compact, free of any cavities sufficient to cause extensive caving.

Mr. Newman believes that the cause of the disturbance is the situation of the lower beds of clay below water level and the heavy rains, forming a fluid mass under the upper firm clays. The 40,000 cubic yards of limestone piled on the ground, with the weight of the building, overloaded the surface, which consequently collapsed, going down in sections 15 to 25 feet below the former level. The pressure on the substratum of fluid clay raised the adjoining creek bed 20 feet above the old level, and several acres across the creek are slightly raised. Numerous dead fish on the dry creek bed show the suddenness of the movement. Rebuilding of the power plant on the present disturbed ground is impracticable. The mill itself lies back of the point of subsidence and its safety is not immediately threatened. Slips of this sort have occurred frequently along the Hudson valley, coming usually after heavy rains.

The general superintendent of the plant, Myron Hammond, has estimated the loss at about $300,000.

LEHIGH VALLEY PRESSURE REDUCED.

New York, N. Y., Aug. 19.—Heavy rains have interfered with cement consumption. This has been shown by the lessening of the pressure under which the Lehigh mills have been operating of late. There is still about 375,000 fewer barrels of cement available in that district than there was at this time last year, so the mills are continuing to operate at their fullest capacity, with practically no exceptions, in order to get a reserve stock ahead, if possible. But it does not seem likely that there will be much reserve developed. Some plants have been trying to buy cement from other concerns in order to fill their orders and there is at least one plant that has been obliged to stop taking orders until it has filled some specifications now running.

In this market there is about 170,000 barrels of Portland cement still left on dealers' hands which was bought at the $1.23 level. There are about 80,000 barrels of cement at this price still to be shipped from the mills. The last of the cement bought at $1.32 will pass out to purchasers before the middle of September, leaving the mills to make deliveries on the modest volume of business taken at the $1.42 rate, which lasted in this market less than 30 days. By the middle of October the mills will be shipping cement bought at the $1.52 level, and by that time it is pretty certain prices here in this market to dealers will be around $1.58, which will be equivalent to 95 cents, mill. This means a $1.63 level to contractors.

ALLENTOWN GIVES CLAM BAKE.

The heads of departments, mill foremen and office men of the Allentown Portland Cement Co. were recently the guests of the company at a clam bake held in the grove located on the company's property at Allentown, Pa. The party was taken to and from the grove by automobiles, and when the day's pleasure was ended everyone voted the affair a huge success. Considerable ingenuity was displayed in the manner in which the program was compiled, also the wonderful appetizing clam menu, two Atlas standard labels being used as a cover and folded together, on the inside of which the menu and program of the day's events were printed. The contestants in the different events displayed skill that would have been a credit to accomplished athletes and every event on the program was closely contested.

The athletic events were conducted on the order of a college field day, the winner being awarded five points, second three points, third two points and fourth one point. After all the events had been run off and the winners selected, a 50-pound pig, decorated with baby blue ribbon, was brought forth and turned loose upon the field. The winners of the various races started after the prize and, after five minutes of laughter, the morsel was snared by A. J. Troxell.

One of the most interesting events of the day was a tug-of-war, which was participated in by everyone present. The two sides were captained by W. W. Kuntz, assistant general superintendent and H. T. Raisbeck, plant manager. After a grueling pull of several minutes the side led by Mr. Kuntz won the pull.

CONDITIONS IMPROVING.

Philadelphia, Pa., Aug. 19.—One of the first material evidences of bettering conditions was the recent announcement by the Coplay Cement Co. of the resumption of preferred dividends, the first dividend to be declared by that company in six years. The demand, while not of a record-breaking nature, is said to be sufficient to carry most of the mills on a capacity basis and to be prospective of unusually fine business from now until the end of the year.

The Lehigh district produces nearly one-third of the entire output of the country, or about 30,000,000 barrels annually. The average monthly capacity of this district is about 2,500,000 or 3,000,000 barrels, and at the present time the mills are said to be running close to 2,000,000 barrels.

CEMENT WAREHOUSE CONCERN FORMED.

Articles of incorporation were recently filed at Camden, N. J., by the Cement Manufacturers' and Exporters' Warehouse Co. The new concern is capitalized at $10,000 and is incorporated to transact a general warehouse business. The incorporators, all of whom are from Philadelphia, are Watson W. Dewees, Harry N. Kurtz and John L. Leahy, Jr.

Bids for water works and sewerage construction for smaller cities in the state of New York will be asked for within three or four months. About $250,000 will be devoted to this purpose.

Activities of Cement Plants.

The Portland cement mills belonging to the Choctaw Portland Cement Works, were recently purchased by the Choctaw Cement & Lime Co., Hartshorne, Okla., a company organized with a capital of $40,000.

A new quarry has recently been opened by the F. W. Wait Lime Co., at its plant at Glen Falls, N. Y. The quarry has never been worked. It is estimated that it will keep the company's kilns busy for the next 25 years.

A lime hydrating and grinding plant has been installed by the Saginaw Lime & Lumber Co., Saginaw, Ala. The company will now manufacture hydrated lime as well as ground limestone for agricultural purposes.

The following officers and directors were elected for the ensuing year at the recent meeting of the Fort Dodge Portland Cement Corporation, Fort Dodge, Ia.; M. J. Nicholson, president; L. H. Van Alstine, vice president; H. S. Van Alstine, secretary and treasurer; T. A. Mair, general manager. The new $650,000 plant of the company will soon be completed and have a daily output of 1,500 barrels.

The Peninsular Portland Cement Co., Jackson, Mich., recently held its annual meeting of stockholders and elected the following directors: D. C. Griffin, H. R. Scoville, John Senior, W. W. Hawley, J. W. Shove, C. F. Cowham, J. B. Holhouse, N. S. Potter and H. Frank Stone. The officers elected were: J. W. Shove, president and general manager; D. C. Griffin, vice president; C. F. Cowham, treasurer, and John L. Senior, secretary.

The largest shipment of cement by the Sandusky Portland Cement Co., Sandusky, Ohio, was made when a train nearly a half mile long and composed of 60 carloads of 12,000 barrels went farward from the plant to dealers in Wisconsin and Minnesota. This shipment took place before the recent increase of freight rates on cement went into effect in Illinois.

An agreement between cement manufacturers of eastern Pennsylvania, public-spirited citizens in Northampton and Lehigh counties and the state highway department will result in the construction of a 12-mile road, running from Allentown to Bethlehem and continuing to Easton. According to the agreement sufficient cement will be furnished for the job. A conference was held in the office of State Highway Commissioner Cunningham at which Col. H. E. Trexler, Congressman H. J. Steele, H. R. Fehr, president of the Lehigh Valley Transit Co.; G. S. Brown, president of the Alpha Portland Cement Co.; William B. Myers, representing the Bethlehem Steel Co., and Senator Horace W. Schantz presented the offer of the Associated Cement Companies and the citizens of that district. The proposition was made that the state highway department do the necessary grading and pay the expenses of such engineering changes as might be necessary and build the road. The Lehigh Valley Transit Co. pledged itself to furnish $1,000 worth of transportation for the freighting of the cement.

The Iola Portland Cement Co. reports a fair business in spite of the unfavorable weather which has been holding back building operations everywhere throughout the Southwest. G. S. McLanahan, manager, expects a big business this fall, beginning with the latter part of September.

Trustee C. L. Hogan, who is in charge of the plant of the bankrupt Altoona Portland Cement Co. for the creditors, under the federal court, began operating the company's plant at Altoona on Aug. 1, with about 100 men, and it is now turning out from 1,500 to 1,800 barrels of cement per day. After the shutdown last fall Mr. Hogan had the plant put in first-class condition. The product is being handled by the Kansas Cement & Material Co., the president of which loaned Trustee Hogan $40,000 on trustee's certificates. Satisfactory bookings are reported.

LIME

Production of Lime in 1914.

The lime made in the United States in 1914, as reported by G. F. Loughlin, of the U. S. Geological Survey, amounted to 3,380,928 short tons, valued at $13,247,676.

The total number of plants reporting operations in 1914 was 954, as compared with 1,023 in 1913, 1,017 in 1912, and 1,139 in 1911. The number operating in 1914 was, with the exception of that in 908, the smallest since record of them was first made, in 1906. The decrease was evidently in part temporary and was due to the unfavorable conditions of the year, but in part marked a continuance of the tendency of the industry toward centralization. In contrast to the decrease in number of plants, the number of kilns in operation increased from 2,203 in 1912 to 2,338 in 1913 and 2,374 in 1914.

Forty-two states, including Hawaii and Porto Rico, reported a production of lime. The five leading states, named in order of production, were Pennsylvania, Ohio, Virginia, Wisconsin, and West Virginia. Virginia's large production during the last two years has been due to a great quantity of lime burned and used by alkali manufacturers, whose figures were not obtained prior to 1913.

Lime used for building represents over one-third of the total output—probably over one-half if this product were segregated from the quantity sold to dealers. The output of building lime in 1914 decreased both in quantity and in value in comparison to that in 1913. Lime for chemical works, paper mills, sugar factories and tanneries also decreased both in quantity and value, but lime for fertilizer made a substantial gain both in quantity and value. This increase is especially noteworthy in view of the fact that agricultural lime is now sold in competition with pulverized limestone.

Hydrated Lime.

The most marked feature of the lime industry since 1906 has been the rapid growth in the production of hydrated lime, which in 1913 had increased over 300 per cent in both quantity and value. The output in 1914 was 515,121 tons, valued at $2,239,916. During the year 126,136 tons of hydrated lime was used for fertilizer. The number of hydrating plants was increased from 80 in 1913 to 82 in 1914.

Imports and Exports.

The imports of lime for consumption in the United States in 1914 were reported by the Bureau of Foreign and Domestic Commerce as 3,455 short tons, valued at $33,670, as compared with 4,139 short tons, valued at $48,538, in 1913, a decrease in quantity of 684 tons and in value of $14,868. The quantity of imports has been steadily decreasing and for some years has been insignificant.

The exports of lime have steadily increased in recent years, both in quantity and value, until 1913, when they amounted to 294,746 barrels, valued at $212,345. In 1914, however, they dropped to 241,406 barrels, valued at $170,744.

Eastern Lime Market.

Reports to the Lime Service Bureau, Washington, D. C., are as follows:

Virginia: Further improvement in demand in the Virginia district is shown by reports of this week and this increase in output covers building lime as well as agricultural lime. Indications now point to a good fall business at most plants that will undoubtedly have material effect on a steadier market for all lime products.

West Virginia: A good demand is reported from the West Virginia district, which is an improvement from last advice, showing only a fair demand.

Maryland: From the standpoint of increase in kiln operation in the Maryland district, there is considerable advance in the amount of output and indications are for a heavy agricultural demand this fall.

Pennsylvania: Demand for building lime continues strong in this district, also for pulverized limestone. Hydrate and pulverized lime, however, are not so much in demand as the former two products.

The reports cover the weekly period ending Aug. 11. Henry M. Camp, proprietor of the bureau, is spending a few days at Atlantic City, where the business of the bureau will be carried on in the usual manner. He will return to Washington Aug. 30.

Trade conditions observed on a trip by Mr. Camp to southern New England and New York points show genuine improvement, he says, there exists a much more optimistic feeling over the future demand for building material than has been observed heretofore, and this condition, naturally, is very encouraging to building supply people. One of the foremost evidences of returning better conditions of trade is the report of increased earnings of railroads and the reports of the decrease in idle car surplus. The war cloud which threatened to involve us with Germany has practically cleared up and it is probable that other questions regarding our commerce with neutral nations will be satisfactorily adjusted. The whole business future looks better, and it is unlikely from now on that there will be any disturbance either political or commercial that is going to retard the present gradual healthy improvement in general trade conditions.

LIME RECOVERY PLANT FOR PENNSYLVANIA.

The D. M. Bare Paper Co., Roaring Springs, Pa., has retained Richard K. Meade, chemical, mechanical and industrial engineer, 202 North Calvert street, Baltimore, Md., to prepare plans and to superintend the construction of a lime recovery plant for converting the lime waste or sludge now discarded into lime of the highest quality. The system employed will contain a number of novel features not heretofore incorporated in such plants and worked out by Mr. Meade. The construction will be of the most substantial type and the buildings of steel. The kiln will be a giant revolving cylinder six feet in diameter and 100 feet long, and the lime as it falls red hot from this kiln will be automatically cooled and conveyed to the lime house. Especially novel features will be introduced in the heating of the kiln and all of the machinery will be motor driven. Mr. Meade makes a specialty of such installations and this makes the fourth rotary kiln plant he has designed this year, the others being for the recovery of alkali waste, the manufacture of barium sulphide and the calcining of dolomite.

The Doherty Lime & Stone Co. is improving its plant at Luckey, Ohio. The company is building several new kilns and completely remodeling old ones. The company is composed of Toledo business men.

Adding Hydrated Lime to Cement Mortar.

During the past year, Henry S. Spackman, a prominent engineer of Philadelphia, conducted a series of tests to determine how the addition of hydrated lime affected the change in volume of Portland cement mortar and concrete test pieces under different conditions of exposure. The results were announced at the annual meeting of the Lime Manufacturers' Association. Mr. Spackman considered that it had been sufficiently proved that a reasonable percentage (say 10 per cent) of hydrated lime, added to cement mortar or concrete, increased the plasticity and impermeability of that mortar or concrete without materially affecting the strength. The effect on change in volume, however, had not been hitherto demonstrated.

In the opinion of the author, the test showed that variation in moisture content affects the volume of a mortar test piece more than change in temperature; but, when kept from contact with water other than moisture in the air, there is a marked tendency to shrinkage of the test piece, which tendency continues up to and beyond the six-month period. When the test piece is in constant or frequent contact with water, the general tendency is toward expansion in volume; but, with the draining off of the excess gauging water, there is a marked shrinkage at the 24-hour period, followed, in some cases, by expansion in 48 hours; and further shrinkage if test pieces are out of contact with water, and expansion if in contact with water. But the addition of hydrated lime, while increasing somewhat the maximum expansion and contraction when the test specimens are constantly exposed either to water or the dry air, markedly reduces the shrinkage due to the draining off of the surplus gauging water, and also the extent of the movement when the test piece is alternately wet and dry.

The conclusion of the investigation was that the addition of hydrated lime will be found advantageous under ordinary climatic conditions in concrete work generally, where it is exposed either to air or to fresh water; and concrete to which such additions have been made, beside being more impermeable, will show less change in volume under varying moisture content.

GERMANS SEEK BELGIUM LIME WORKERS.

As a result of the lack of workmen, the lime industry of Germany is suffering considerably, and manufacturers of West Falen and Rheinland have directed a petition to the commander in chief of the Seventh German army corps in Belgium, requesting him to send Belgium workmen to their lime plants. As the lime industry supplies the steel and chemical industry so important to Germany just at present and there are many expert lime workers idle in Belgium, it would be of benefit to both parties for Germany to put them to work in the lime plants.

OHIO LIME INDUSTRY IS BOOMING.

The lime industry is flourishing at Gibsonburg, Woodville, Genoa and other towns in northwestern Ohio.

At Gibsonburg more than 300 men are steadily employed at the kilns. Demand is so great that the finished product is being shipped away as fast as it

is manufactured. The Cleveland firm that has taken an option on the 73-acre Michaels farm on the edge of Gibsonburg, has done some quarrying recently for the purpose of securing samples. It is understood that this company is about to open up a new lime plant soon. The National Mortar and Supply Co. expects to have an entirely fireproof plant shortly.

Limestone land located favorably for transportation facilities has sold recently as high as $500 an acre.

LARGE GANG WORKING ON LIME PLANT

Work on the Vermont Marble Co.'s new lime plant at West Rutland, Vt., is progressing rapidly, the foundation being about completed. The building will be 435 feet in length and is being constructed entirely of cement.

A large traveling crane is expected in a few days. This crane is one of the largest in the country, having a boom of 85 feet in length. This will be used in placing the heavy machinery and kilns, which are about 60 feet long.

At present there are about 100 men employed on the building but when it is completed, about December 1, the force will be reduced to 14 men.

A gang of men from the Fuller Engineering company of Allentown, Pa., will arrive soon to install the machinery. The construction work is under the supervision of Denton J. Smith.

Resolutions as Keynote of Campaign.

At the recent annual meeting of the National Fire Protection Association held in New York, the following resolutions were adopted as the keynote of the campaign of that very progressive and efficient organization which is perhaps doing more for the elimination of the excessive and needless fire waste of this country than any other body. In fact, the National Fire Protection Association has gained the respectful opinion of the best architects and engineers engaged in the designing of buildings of all types and for all purposes.

The National Fire Protection Association, assembled in New York City for its nineteenth annual meeting, advocates the following measures in its warfare against the needless sacrifice of human lives and property by fire:

1. The encouragement of fire-resistive building construction through the adoption of improved building codes by all states, cities and towns; the inclusion in such codes of adequate rules for exit facilities based on the occupancy for all buildings, and the general recognition of the fact that although fire-resistive construction is of the greatest possible importance, it is of itself not sufficient. The lesson of the greatest factory fire of the year is that large industrial buildings, even if built of cement and steel, must be subdivided by fire walls and must have adequate means of stopping fires in their incipiency.
2. The adoption of laws or ordinances requiring the installation of automatic sprinkler systems as fire extinguishing agents in all factories, commercial establishments and city blocks. The adoption of ordinances requiring the construction of fire division walls not only as a property protection device, but as providing the best life saving exit facility.
3. The establishment by law of a Fire Marshall in every state, who shall not be a mere political office holder but a trained man with trained assistants competent to direct the work as educator and prosecutor.
4. The investigation of the cause of all fires by public officials, and the enactment of laws fixing personal liability for damage resulting from fires due to carelessness or neglect.
5. The consolidation of all legal forces so as to provide for the systematic inspection of all buildings by local firemen and technically trained building and factory inspectors so as to insure the vigorous enforcement of rules for cleanliness, good housekeeping and the maintenance of safe and unobstructed exits, fire-fighting apparatus and other protective devices.
6. The especial safeguarding of schools, theaters, factories and all other places in which numbers of people congregate or are employed.
7. The vigorous state and municipal regulation of the transportation, storage and use of all inflammable liquids and explosives.
8. A careful study of municipal water supplies, their adequacy and reliability with special reference to their adequacy in case of conflagration.
9. The universal adoption and use of the safety match.
10. The education of children and the public generally in careful habits regarding the use of fire.

In the furtherance of these objects we appeal for the co-operation of all citizens. We ask them to help in the dissemination of our valuable literature and in the use of the standards of fire protection so carefully worked out by our committees to the end that the lives and substance of our people shall not continue to be dissipated by a reckless and easily preventable waste.

UNIVERSITY TESTS SHAWANO LIMESTONE.

The geology department of the Wisconsin University has made an analysis of limestone samples sent by Eugene M. Wescott, of Shawano, Wis., and shows the material to have an average of 88 per cent carbonate of lime. W. W. Weir, of the University, states that the strata of rock from which the sample was taken may be considered a fairly good limestone and can be used for agricultural purposes. If the limestone, which looks somewhat greenish-yellow and shows a slight stratification, were thrown out, leaving the firmer and more crystallized stone the carbonate content would run approximately 95 per cent, according to Mr. Weir. It is believed that the stone of low carbonate content is only a stratum and can easily be thrown out if the stone is to be used for pulverizing purposes.

INSTALLING PULVERIZING PLANTS.

Pierson Booth is installing what he terms a first-class limestone pulverizing plant at Campbell Hall, near Warwick, N. Y. In experimenting with the limestone on his property Mr. Booth has consulted Professor J. F. Barker and Mr. Collison, chemists at the Geneva experiment station, and has ordered machinery which will grind the material to the degree of fineness recommended by them. An analysis of the stone shows 95 per cent carbonate of lime.

NEW PULVERIZER CATALOG.

The new catalog of the American Pulverizer Co., East St. Louis, Ill., has been published in a very attractive manner and presents the merits of the "American Ring" pulverizer very favorably. Illustrations showing the pulverizer in use, as well as sectional views, are presented, together with statements of users of the pulverizers and a number of tables and other data of interest to users of grinding machinery. The catalog which consists of 12 pages is bound in a beautiful leatherette cover and is in keeping with the high ideals of the American Pulverizer Co. and its secretary, Mr. George C. Videtto.

The American Sheet & Tin Plate Co. is arranging to build a big addition to its plant at Chester, W. Va.

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With the QUARRIES

A State's Policy in Highway Improvement*

BY MAJOR W. W. CROSBY, C. E.,
Former State Highway Commissioner of Maryland.

It is unnecessary to argue now to the people of Ohio concerning the advantages of better roads. They have shown that they are in accord with the proposition in general by their wise establishment of a state department to handle the work and the provision of funds for its operations. The speaker merely wishes by his above remarks to indicate the breadth and the importance to all of the subject.

The question now confronting the people of Ohio and their state highway commission are those important ones of "ways and means." That is, how shall the greatest benefit to the most people be had for the least expense?

Right at the beginning a word or two of caution may be profitably considered. First, there is an old saying that "The wise man learns from the experience of others; any fool can learn from his own." That is, the people and their agents in any community should, in a matter like this, do neither of two things; they should not undertake to begin, at the beginning, to learn and to experiment in a subject on which millions of dollars have already been expended—some wisely and profitably, others to the opposite ends. The commission and the public can undoubtedly profit, in the end, by taking the necessary time to become aware of the failures in the experience of others and by means of proper advice and deductions, avoiding the waste of funds in the repetition of unsuccessful attempts.

On the other hand local conditions affect every road problem to such an extent that it would be equally unwise to blindly follow even the successful work in another locality or state without due and careful consideration of the peculiarities of local conditions as to soil, climate, traffic, etc. What is deemed necessary for a successful road surface in a climate where snow scarcely ever exists for more than a day or so at a time may be extravagant under conditions where the roads are covered with a protecting coat of snow for four months, or such a matter, yearly. The second caution in mind is this: The first cost of road improvement, large enough as it may be, is never its final cost, nor is the first cost alone or of itself a fair measure of the value of the work done. This is a most important point for both the people and their commission to bear constantly in mind and it will perhaps be worth a short explanation.

On the other hand, even though the actual maintenance cost of the road with a greater first cost may be less, its economy may not be clear for the reason that the greater interest on the higher first cost may more than offset the saving in maintenance under certain traffic conditions.

This problem of the proper selection of a form of construction that will give in any particular case the largest satisfaction with the greatest economy in the long run is the most important and complicated of all the commission will probably meet in its work. Certain general principles may be laid down. It is impossible to build a satisfactory road of any kind unless the drainage is properly attended to. It is folly to construct a good road surface on a grade which is, or is likely to prove, unsatisfactory during the life of the surface and the other road structures. Doing so simply helps to perpetuate the undesirable grade and increases the expense for its removal.

It is certain that the travel on an improved road will be greater than it was on that road before improvement, and that the travel on the roads generally is on the increase. Hence in determining the width and character of a road surface, or in designing its bridges, provision must be properly made for the near future at least. The motor vehicle is increasing in numbers and in usefulness. Public road surfaces now are seldom, if ever, designed for one class of travel alone, but an estimate of the relative intensity of each kind should be obtained and the design made accordingly. Proper consideration must be had of the greater speed of the motor and of the danger to horses from too slippery surfaces. The width of the macadam or metaled portion of the road must be sufficient for safe passing and economy of maintenance, and yet narrow enough to be economical in construction.

Upon the proper selection of the form of construction may be said to largely, at least, "hang all the law and prophets" in the matter of satisfaction with results. There will doubtless be a tendency on the part of the citizens of the state to urge the restraint of expenditures to a less figure on the average per mile than will really be economical in the long run, and there will perhaps be as strong a tendency on the part of the contractors to advocate the expenditure of greater sums per mile than is economical. The proper mean between the two extremes will be the duty of the commission to find. It will be seen that many important questions will come before the commission and that the highest skill and judgment will be needed for their proper solution. With the enormous amount of work to be done with the limited funds available with the desire for early accomplishment, and with the momentous results depending on their work, the commission will doubtless appreciate the necessity for correct organization of its department, for the proper selection of its personnel and for the need for economy and efficiency in all its operations. So much can be learned from other communities that have faced similar situations that every possible benefit from past experiences should be derived. Then there is no doubt but that people of Ohio and their commission will solve, at least as successfully as have the other states that have attempted similar work, their road improvement problems.

In the work of the commission much assistance can be given it by the general public through merely a proper attitude of mind. Unquestionably the members of the commission assume their duties having at heart the same interests and with the most sincere intentions to produce the ends desired by the people, whose agents in this matter they are. If now each individual citizen will endeavor to imagine himself, on any occasion, in the position of a commissioner; will make as may be necessary the same allowances for the official as the citizen would, under similar circumstances, ask to be made himself; if the individual will try to see the side of any question that the official must see; in short, if the citizens will really uphold and co-operate with the commission in every possible way, the results to the public will be infinitely quicker and more satisfactory. Friendly, helpful advice, or even criticism, will be welcomed by the commission, it is certain. Destructive criticism—"knocking" and fault-finding with no suggestions for improvement—will only delay and interfere with the ends hoped for.

When the improvement of a road is once properly made, although the main expense may be over for a long period, the outlay on that road does not, or should not, stop. Nothing is more wasteful than to borrow money for road improvement and then to neglect the maintenance. The road that does not require annual maintenance has never been discovered and it never will be if the use of the road is to be continued. This fact should be clearly understood and even before the road improvement is begun the after-maintenance of the improved road should be assured and provided for. Such maintenance should be prompt and efficient and should not be supported by borrowed funds, but be met by annual taxes in addition to the levies for interest and sinking fund charges on the loans for construction.

Any reader of the newspapers and trade and technical journals, especially of the columns devoted to street and road work, must be impressed with the enormous amount of money in the aggregate that has been voted in the past year for road improvement. One naturally wonders what the results of these vast expenditures are going to be and how much more will be called for. Ten years ago the problem before the good roads advocates was how to get the funds for road improvement. Now, in this section, at least, that question seems to have been solved for the present and a new problem presents itself. This is how to best expend the funds available.

The advocates for road improvement who have been working hard for the provision of funds cannot afford when that point is gained to then lie down and rest. A beginning has but been made, and unless they keep alert and help to solve the new problem now and those bound to come up in the near future, they will find that it will be but a short time when the funds will be discovered to be insufficient for complete satisfaction; that further funds will be needed, and that the fight for them will have to begin over again with the additional disadvantage then coming because of the dissatisfaction in the opposition from the results of earlier expenditures. Unless, therefore, this new problem shall be solved with reasonable satisfaction, the good roads cause may be expected to be even worse off than it was 10 years ago.

The best results (including, of course, the moral and material benefits to be expected) from the funds now available can only come from expending them promptly, economically and efficiently. This perhaps sounds trite, but let us analyze a bit:

Promptly—Material results at the earliest possible moment are desired. The money is ready and waiting. Idle money is an expense. All this is well recognized, but too great "haste makes waste." Care and proper amount of preliminary investigation, organization and preparation will certainly contribute toward economy even when consideration of the expense for idle money is included. Probably on this point the real danger lies in going ahead more or less blindly and too quickly, rather than too slowly.

Economically—In view of the immensity of the cost of complete satisfaction, in which, as stated, the present expenditures are recognized as but a beginning, everyone will demand that the dollar be made to go as far as possible. "Engineering" has been defined as "making one dollar do the work of two." If one dollar can be made to do the work of three in this work, the fact will be widely appreciated. To have one do the work of less than two will be condemned. Hence it behooves all connected with these expenditures to give this point serious attention. True economy must be the aim. Small salaries, cheap labor or materials will not suffice. It will be better economy, especially when the relative importance (in the figures of cost) of salaries or prices paid is compared to the value of the results, to pay a man $1,000 and get $2,000 worth of brain results than to pay $500 for $500 worth. Saving at the spigot and waisting at the bung hole never can be economy. Nor can economy be had by employing untrained, inexperienced men, obtainable at perhaps low salaries, in preference to securing competent men, who perhaps have even been fortunate enough to have had experience elsewhere at liberal figures.

Efficiently—Under this head may be considered the transmutation of the dollar into the fact of the unfinished road. It is not done chemically, by the waving of a wand and the mumbling of some magic words, nor automatically. Certain machinery and organization are needed; the employment of the brains and muscles of human beings, the collection and placing of materials, the use of animals and of machinery of various kinds are required. An enormous variety of almost all elements entering into the process is available and the uninitiated are aghast at first, beholding the possibilities for decisions. But again experience can be of service and competent, unprejudiced advice can readily point out, in most cases, several paths to be safely taken to the desired end.

First, perhaps, comes to the responsible authority in charge of expenditures of the money for the production of results the duty of framing the necessary organization of human material, so that the work to be performed by it may set in motion the other machinery useful for bringing into existence with satisfaction the finished road. And this matter of organization is most important. If a dollar is, as may be expected frequently, to complete a foot of road and one form of organization requires 20 cents out of that dollar for its operation, while another form will only require 10 cents out of the dollar, it is easy to see under which the road itself should belong when completed.

Some states have reported their overhead (organization) charges as 16 per cent, some 12 per cent, some eight per cent. They are variously estimated at from eight to 16 per cent of the money expended. The Report of the State Roads Commission of Maryland for the years 1908, 1909, 1910 and 1911 shows the overhead (administration and engineering) charges on the $4,500,000 worth of work done there to have been less than six per cent. The possibilities for efficiency (or economy) in those matters by proper organization are evident. After establishing a form of organization for handling the work there comes the "stock taking" or accumulation of information concerning existing conditions and facts affecting the work to be done, and the setting of a goal or the laying down of standards for the results to be accomplished. Both are important and the latter cannot be wisely done unless the former shall have been properly performed. The survey of conditions of accumulation of facts must be followed by arranging them for ready reference and by digesting the information so that its true value may be had and so that efficiency may result.

Now-a-days a great variety of ways and means for producing road systems and road surfaces exists. A great many materials have become available; differing ideas as to maximum and minimum grades; straight lines versus curves, and roadside ditches; the advantages of gravel, the use of bituminous materials or of concrete, etc., so that it may confuse the inexpert authority and affect the efficiency of its operations. If an unnecessarily expensive method or material is chosen the money will not go as far as it should. If an insufficient amount or character of work is done, it will eventually have to be done in order to produce satisfaction, and this rebuilding may add materially to the cost. Hence, there is again need for competent judgment in all the various decisions that will have to be made at this stage of the work.

The present road problem seems to the speaker to include the proper selection of lines on which to first make the improvement, the establishing of proper standards for the results, and the selection of the proper methods and materials to be used to that end. In selecting the roads to be improved (and it is nearly always the case that such selection from among the whole public mileage is necessary) it is frequently and probably most noisily urged that roads be selected that run through the more densely populated sections in order "to do the greatest good to the greatest number." Such a selection frequently would mean improving roads closely paralleling a railroad, and it may be seriously questioned whether such a decision would really do the greatest good to the greatest number, in the end. A duplication of transportation facilities in one limited section to the exclusion of any improvement of them in another, perhaps even more deserving, is not at all sure to produce always the greater good, in the long run. It is quite possible that under some circumstances radial roads (leading from different sections into a town or railroad station) may be far better for the community than arterial systems, mainly to be used for pleasure and motor traffic. The decision depends on circumstances, but the importance of it may be indicated here.

In laying down standards by which to work much can be learned from recent experience. Ten years ago the highway engineers were mainly recruited from among railroad engineers and the theories and practices of railroad engineering were applied to the highway work, in many cases unfortunately. For instance, lines and grades unnecessarily were too frequently built at great expense. Later the flexibility of the highway vehicles over those using the steel rails was recognized and considerable saving in expense for highway construction, as well as improved appearance, resulted. The old saying concerning the "cobbler and his last" has a value in this connection. Probably in no one feature of highway work has greater mistakes been made than in that of the selection of the methods and materials for the road surfaces. Because of the failure to keep and publish proper records in the matter these mistakes are generally difficult of demonstration, but nevertheless they may be indicated or illustrated. First, it should be recognized more fully that perhaps at present there is no one "best road" for general use. To try now to adopt certain standard materials or road surfaces as a panacea for all road ills is as out of date as it is to keep a "household remedy" on hand for all human ills. Every good material has its peculiar value and the problem is to make that selection from the available list that will best fit the conditions of the particular case; in other words, "to make punishment for the crime." That there is need for emphasis on this point is shown by a recent editorial in one of the leading newspapers of the South, which stated that "Maryland is striving to find the best material possible for the permanent road system she is building." The danger of improper deductions from such an editorial remark is obvious, in view of the general agreement among highway experts as above expressed by the speaker.

A few years ago there was a fad among the road authorities for "broken stone macadam" just as there was

* Read at the Interstate Stone Manufacturers' Association, Columbus, Ohio, Jan. 14-15, 1915.

among street officials for stone block pavements. And the speaker has personally seen money wasted for macadam when gravel or sand-clay roads at half the cost would have served as well. Now there seems to be in many quarters a stampede (perhaps encouraged by the cement manufacturers) toward concrete roads. The speaker has seen much money wasted through the construction of concrete roads, evidently through poor judgment or lack of information and balance in making the decision for them. It is, of course, true and important that especial care be exercised in expending borrowed funds so that as great permanence be had in the work done as may be practicable. But on the other hand, many reasons, including that of efficiency, argues against extravagance in construction.

The interest on the first cost must be given due consideration in figuring the long-run cost, which also includes the maintenance charges. It may be found more satisfactory and cheaper even to rebuild a surfacing at intervals rather than to invest too large a sum in the first cost of it, to say nothing of the danger now present of any construction's becoming obsolete under new traffic conditions before its real life shall be expired. The most permanent work that can be done by borrowed funds is perhaps the proper location of the road, the establishment of satisfactory grades and the provision of permanent waterways and drainage facilities, so that even when any surfacing on it shall wear out these things may still remain in good condition and unnecessary to be changed. With long-term bonds the speaker would suggest the possible advisability of even limiting their proceeds to locating, grading, bridging, and draining roads and relying on short-term (say ten-year) bonds or annual levies for the surfacing. The experiences of some of our foremost municipalities support this view.

In any event the speaker hopes that some of the many considerations of importance in connection with the vast expenditures now being begun for road improvement through the country may have been suggested by the foregoing and that the need now for calm, ripe judgment, aided by experienced and unprejudiced counsel, is evident to all those interested in good roads, and that all good roads advocates will remain alert and insist on its being had.

An Up-to-Date Plant in Canada.

The quarrying industry in Canada is destined to grow considerably in that country, and as an example of what is being done we may refer to the Bruce Trap-Rock Quarries, situated on Georgian Bay, at Bruce, Ontario, where some excellent trap-rock deposits are being opened by the Martin International Trap-Rock Co. Recent installation of machinery will enable the company to compete with other large crushed stone concerns in the neighborhood.

The method of working these quarries is quite up to date. After the rock is drilled by two large electrically-operated churn drills and blasted, it is loaded on steam cars by two 110-ton steam shovels, and hauled to the crushers. The crushing plant is of considerable proportions. The initial crusher, which receives the rock direct from the cars, is a seven by five-foot Superior jaw crusher, which reduces the material to about 10 inches. This is one of the largest of the type ever built, and was manufactured by the Power and Mining Machinery Co. of Milwaukee. The material, after leaving the large crusher, passes over a grizzly, the fines going to a conveyor, and the oversize to two No. 9 McCully crushers.

From these crushers it is discharged to the same conveyor, and elevated and delivered to an 84 inch by 18-foot screen. From the screen the fines are discharged into another conveyor, the oversize going to two sets of 54 by 24-inch Superior rolls. These discharge into the same conveyor, and the material is carried to a second 84-inch by 18-foot screen. The larger finished sizes from this screen are delivered to storage piles by gravity chutes and conveyor, the fines being delivered to a cross conveyor and sent to two four by 12-foot double-deck shaking screens, and after screening the fines go to storage piles by chutes and conveyor.

The crushed stone is delivered to two rows of piles, according to size. Under each pile is a concrete tunnel, with feeding hoppers in the roof, and each tunnel is connected with a 330-foot conveyor, capable of loading stone at the rate of 750 tons per hour, or a total of 1,500 tons per hour from both tunnels. Near the discharge end of the tunnels is installed a Merrick weightometer, which automatically weighs the material as it is delivered by each conveyor. The entire plant is so arranged that it can be materially enlarged and the output increased as desired.

The Pemeta Rock Co., Oklahoma City, Okla.; capital stock, $10,000; incorporators, Scott Braden, Fred E. Thomas, W. R. Crusoe, Oklahoma City.

Quarry Notes in Brief.

The Cleveland Stone Co., which does a fine business in the Pittsburgh, Pa., district, has redeemed $50,000 of its first mortgage four and one-half per cent bonds. This is four months in advance of the date, Nov. 1, at which the company would ordinarily redeem $37,500 of its bonds.

The Bradley Pulverizer Co. has leased the plant of the Allentown Foundry & Machine Co., on South Third street, Allentown, Pa. The company is headed by Peter H. Bradley and William A. Gibson is manager. It will manufacture mills weighing from 15,000 to 45,000 pounds for grinding cement.

The Weeping Water Stone Co., Weeping Water, Neb., is now operating with 50 men at its quarry east of that point, and the managers have announced that they will hire all the good men they can get. The east quarry has just negotiated a lease for eight and one-half additional acres of land, and has already begun work taking the stone from this. The tract that they have just exhausted was 40 acres in extent, and it is estimated that over 1,500,000 tons of stone was quarried from the 40 acres, as it has been running about 40,000 tons to the acre. The Olsen quarry west of town has been working a large force for some time, and with the completion of the new crushing plant, the force has been enlarged.

The Standard Lime and Stone Co. has closed its quarries near Lapidum, Pa., on account of lack of orders.

The directors of the Texas Rock Co., Beaumont, Texas, declared a 20 per cent dividend late in July. This is the first dividend declared by the company since its organization, 14 months ago. The quarry of the company is located at Millican, in Brazos county. The chief sales are from crushed stone for road-building purposes and for use in concrete. The company is now filling a contract with Montgomery county which calls for 8,000 yards. This order will in all probability be increased to 10,000 or 12,000 yards. Mayor Emmett A. Fletcher is president of this concern, W. E. Sampson is active vice-president and R. E. Hardwicke is secretary and treasurer. The other directors are O. A. Seward and E. E. Townes.

Nearly all of the Johnston & Rhodes stone quarries at Downsville, Delaware county, N. Y., were closed down in July for a period, it is estimated, of about six weeks, or until a market can be found for the stone. It is said that the company has over $100,000 worth of stone on the various docks along the D. & N. and O. & W.

The Rosedale Crushed Stone Co., Kansas City, Mo., is to furnish about 10,000 yards of crushed stone for the new elevator of the Kansas City Southern and about 18,000 yards for the new Santa Fe elevator. Because of the almost incessant rains, this company was enabled to operate only nine days during the month of July. August has proved better from the weather standpoint, with the proportion running the other way—about three days of clear weather to one of rainy.

The Arnold Stone Co., of Neelys Landing, Mo., and C. C. Huthmacher, of Grand Tower, Mo., bid lowest for 16,000 cubic yards of riprap stone to be used in the First and Second Mississippi river district.

The Steubenville Stone Co., of Steubenville, Ohio, will build a four-story reinforced concrete and hollow tile warehouse 21x140 feet from plans by Architects Peterson and Clark, of that city.

Screens Handle 500 Tons Hourly.

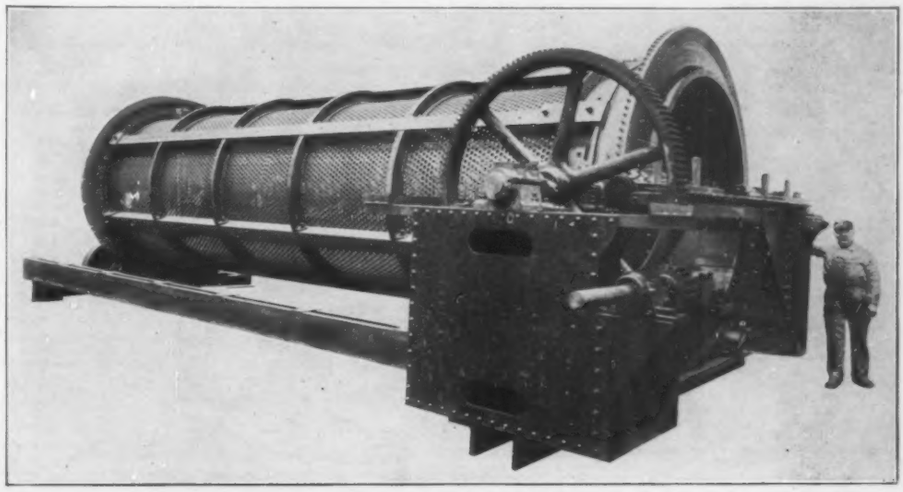
What is said to be the largest pair of revolving screens in existence is operating daily and handling 400 yards or approximately 500 tons of rock per hour, receiving stone three inches and under and delivering a clean washed material, the equal, if not the superior, of any product ever before produced in stone crushing practice.

As shown in the accompanying illustration, each of these mammoth screens is mounted on a heavy structural steel frame, so built that each screen is entirely self contained, with the exception of the motor driving it. The screens are operated as a pair, one revolving to the right and the other to the left. They have separate electric motors connected to secondary pinion shafts with flexible couplings. A cloth pinion on the motor engages cut steel gears mounted on the secondary pinion shafts. The rollers are of chilled iron with faces ground true, and on these ride the heavy cast steel tires on the heads of the cylinders.

Both ends of the screen are open, making access and observation easy and permitting the removal or installation of screen plates without interfering with or disturbing other parts of the machine. All gears and pinions are of steel, as are also the tie bars between the heavy angles or ribs. By this construction, the whole frame of the cylinder is one solid truss. The cylinder is seven feet in diameter and 26 feet long on the perforated plate surface.

In order to properly wash the tremendous amount of stone going through this pair of screens, 2,400 gallons of water are forced through a six-inch pipe in each screen and is charged through multiple nozzles or jets at a pressure of 80 pounds.

The weight of the two screens exclusive of motors, pipes and chutes, is 110,000 pounds. When under full load, 76 horsepowers are required to operate the two screens. They were designed and manufactured by the Power & Mining Machinery Co. for one of the largest producers of limestone in the world, and were sold through the Chicago office of the company, 825 Old Colony building, Chicago, Ill.



LARGEST STONE WASHING SCREEN IN EXISTENCE.

SAND and GRAVEL

Excavators to Economize Handling of Material

BY H. B. SAUERMAN,
Assoc. Member Am. Society of Civil Engineeers. Member Western Society of Engineers.

With the introduction of machinery for the excavation of sand, gravel and other earth materials a large field was opened for the development of equipment which would handle the material in the simplest and most economical manner possible. Great progress was made in a comparatively short space of time but the tendency was to increase the amount of equipment to facilitate the rapid progress of the work which resulted in material handling plants becoming more or less complicated, expensive in first cost, in cost of operation and requiring a heavy yardage to show economical handling. Where the yardage was large and the plant could be kept busy the greater part of the season such a plant could be operated profitably, but where the amount of material to be excavated was comparatively small; e. g., a gravel plant producing a few hundred yards of material per day; the cost per excavated yard made competition exceedingly hard for the smaller plants.

In the operation of a sand and gravel washing and screening plant three distinct steps are necessary to bring the material from the pit to the screens; viz., excavating from the pit, transferring the material to the plant and elevating to the screens. These operations are accomplished in different ways; the steam shovel, industrial cars and elevator being the most common. Conveyor belts working in connection with steam shovels are also common. There was, however, a constantly increasing demand for simple efficient equipment which could be operated economically in connection with a moderate capacity plant.

This demand for a simple and efficient machine for excavating, conveying and elevating sand, gravel or other material from either a dry pit or from under water, has been entirely satisfied with the introduction of the successful dragline cableway excavator. The wide range of operation, the adaptability, the moderate first cost, the simplicity of construction and operation and the low cost of maintenance make the dragline cableway excavator one of the most efficient and economical means for handling material. The economy of this type of excavator is very apparent when taking into consideration that it will dig, convey and elevate the material to the top of bin in one operation without any intermediate machinery.

In brief, the dragline cableway excavator as seen in operation is as follows (see Fig. 1). A well guyed mast or tower, an incline track cable attached to the top of the mast at one end and anchored to

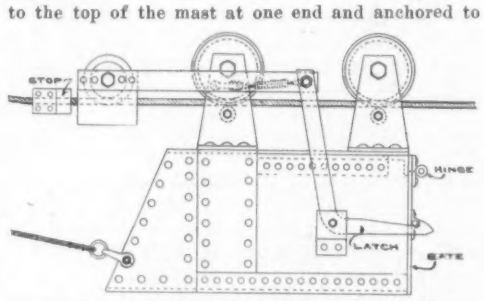


FIG. 2. THE ORIGINAL BUCKET—SYMONS PATENT.

the ground at the other end (usually at a distance of 400 to 600 feet from the mast); a carrier attached to a scraper bucket suspended from the track cable; a tension cable working through a set of fall blocks, at the top of the mast, for slackening and tightening the track cable; a pull cable running from the front of the bucket through a guide sheave on the mast; a double drum friction hoist for controlling the tension and pull cables.

History of Dragline Cableway Excavators.

The idea of operating a drag bucket in connection with a cableway was covered by a number of patents granted D. T. Calhoun in 1893 and 1894. In the year 1895 a patent was granted to James R. Hall. This patent covered a drag bucket designed to operate in connection with a tautline cableway and was operated by a three-drum hoist. This Hall cableway met with success but it was slow and somewhat cumbersome in operation. In 1898 another patent covering a drag bucket cableway was granted to Frank Knight, a civil engineer in the employ of the Lidgerwood Manufacturing Co. The Knight drag bucket cableway had the advantage of being more simple in construction and operation than the Hall cableway. In 1902 a patent similar to the Hall patent was granted to H. H. Guffin. This cableway was operated with a two-drum engine.

The original idea of a dragline cableway excavator operating with a slack track cable is not a comparatively new one. The original patent was granted in September, 1895, to Mr. Symons (Fig. 2). The original dragline cableway excavator was designed for reloading coal. This did not prove to be a success, due to the fact that the bucket was not of proper design. Until the year 1908 little, if anything, was done toward the development of this excavator. During the years 1908 and 1910 two patents were granted on two different types of dragline cableway excavators. Both of these excavators were an improvement over the original patent, but their success was very limited, due to their limited adaptability and dumping arrangement. Other patents were granted in 1911.

Since then a large number of dragline cableway excavators have been installed, and their successful and economical operation, proves conclusively that this method of handling material deserves a thorough considerations.

Operation of the Cableway.

The operation of the cableway is very simple, as it is a one-man-controlled machine. To operate, the engineer releases the friction of the front drum of the hoist which controls the pull cable. The bucket then travels rapidly down the incline cable until it reaches a point above the excavation when the rear drum is released, which allows the bucket, carrier

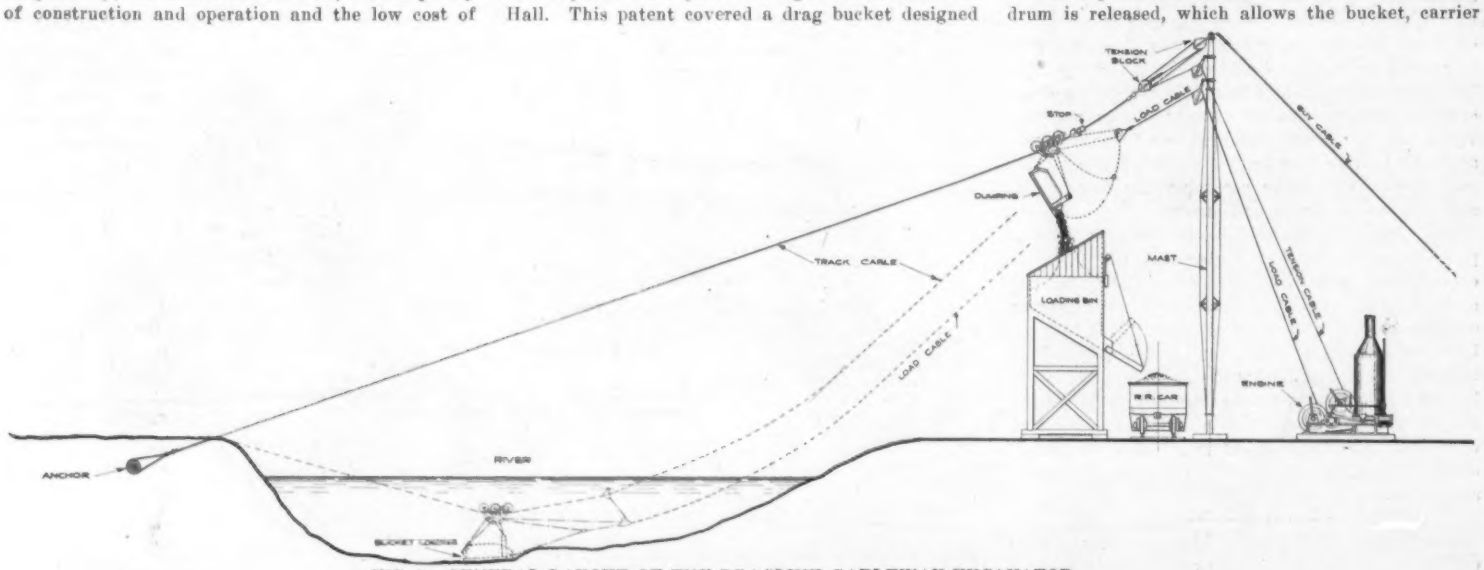


FIG. 1. GENERAL LAYOUT OF THE DRAGLINE CABLEWAY EXCAVATOR.

and track cable to drop into the pit. The front drum is then put into operation drawing the pull cable and thus dragging the bucket into the material, filling it. With the bucket loaded the rear drum of the hoist is put into operation, taking in the tension cable which raises the track cable, and the bucket is conveyed and elevated simultaneously to the dumping point where the load is automatically discharged by tilting the bucket forward.

Conditions sometimes require the load to be delivered at the foot of the track cable, in which case the loaded bucket runs down the incline by gravity, the load automatically discharged and the empty

FIG. 4. USE OF BELT CONVEYOR AND TUNNEL IN CONJUNCTION WITH EXCAVATOR.

bucket pulled up the incline to the point of excavation. In this case the track cable remains taut from the time the bucket starts travelling down and until it again reaches the digging point.

Cables and Hoists.

The size, construction and quality of the different cables used in the operation of a dragline cableway excavator will depend upon the different requirements and conditions. The cables should be specified by a competent authority in order to get the best service.

The excavator can be operated by either steam, electric or gasoline power. The type and size of hoist should be determined by the individual and local requirements. To get the best and most economical results, the hoist must have ample power to

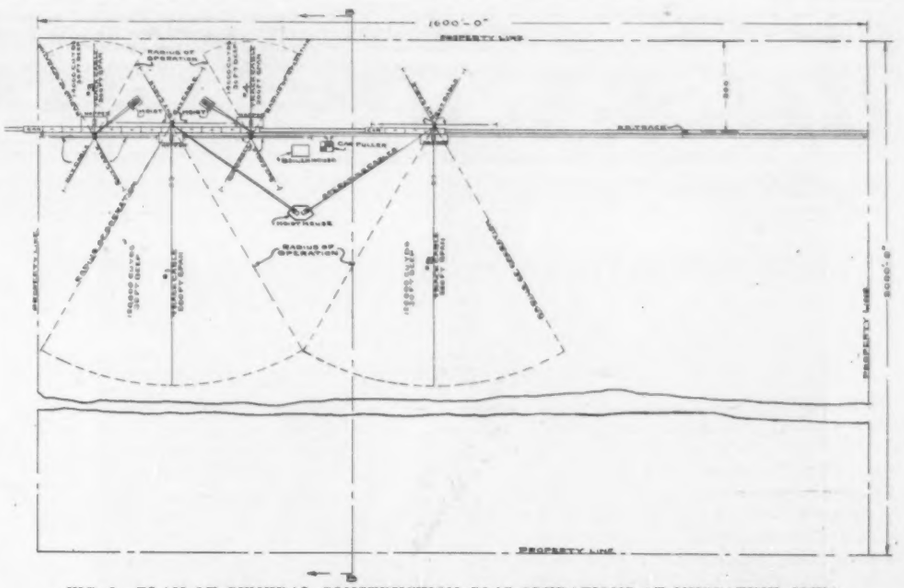


FIG. 3. PLAN OF GENERAL CONSTRUCTION CO.'S OPERATIONS AT MUSCATINE, IOWA.

meet the speedy operation required for the maximum capacity. The excavator requires a double-drum hoist, preferably with a two-speed arrangement, slow speed when digging and high speed when hauling in the bucket. The hoist should have sufficient power to operate both drums at the same time.

Economy of Operation Proves Its Adaptability.

The development of the dragline cableway excavator has made it possible for owners of gravel deposits with limited capital to install plants for preparing gravel and sand for the market, as the cost of digging the gravel and delivering it to the plant was prohibitive with the type of machinery generally sold for this purpose, except on a large yardage basis. The dragline cableway was developed for digging material which cannot be economically excavated with other machinery.

The dragline cableway excavator will dig and convey the material within a radius of 600 feet from the plant at less cost than the combination of machinery where it is necessary to handle the material several times. Where large capacity is required, two or more cableways can be installed and operated at as low a cost as a combination of other machinery to get the same capacity. This is very apparent as only one man is required to operate the cableway. The steam can be furnished by a central boiler. The cableway is very economically operated by electricity, as the current consumption is very low, due to the intermittent service of the hoist. Gas and oil engines are also being used to good advantage. The cost of digging the gravel and conveying it to the plant with a dragline cableway will vary from three to seven cents per yard, depending upon the installation and conditions.

When operating two or more cableways for large capacity one can readily see that the cost of production when the demand is low will remain the same, as only one unit need be operated, as illustrated in Fig. 3. The sketch shows how several dragline cableway excavators can be installed to operate over a large area and secure large capacity by operating independent units. The power is supplied from a central boiler so that only one fireman is required. When the demand is light, only as many units need be operated as will be necessary to get the desired capacity.

The cableways are installed in various manners in connection with the gravel plant. Where it is possible, it is advisable to deliver the material direct to the hopper feeding the screens. Where many boulders are encountered it is sometimes advisable to dump into a hopper some distance from the plant. The boulders can here be separated from the gravel by passing the material over grizzly bars and by passing the boulders to the crusher. The sand, gravel and crushed rock is then delivered to the screens by means of a belt conveyor. In some places where only one cableway is installed for delivering to a producing plant which has a larger capacity than the cableway, it is advisable to have the cableway deliver to a storage pile from which the material is delivered to the screens by means of a belt conveyor. An economical arrangement for reclaiming from the storage pile is to have a concrete tunnel under the storage pile. The belt conveyor in the tunnel (Fig. 4) is fed by openings in the top of the tunnel.

Under most conditions the maximum economical span is from 500 to 700 feet. This, of course, will vary under special conditions. The machines are used for excavating material from under water or from the dry. They will dig, elevate, convey and dump the material from pits to bins, screens, cars, stock piles or spoil banks.

For shifting the direction of the track cable, dif-

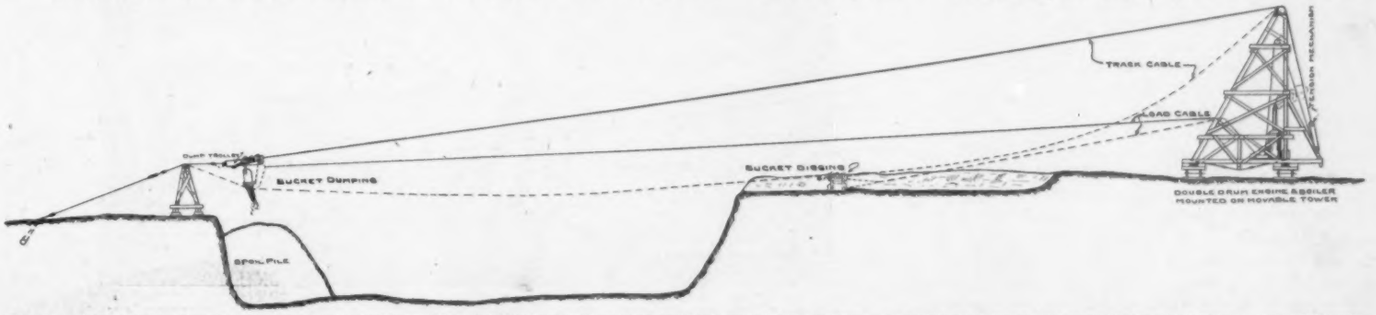


FIG. 5. SKETCH SHOWING MOVABLE TOWER ARRANGEMENT IN CONNECTION WITH DRAGLINE CABLEWAY EXCAVATOR FOR DIGGING AT HIGHER ELEVATION AND DELIVERING TO LOWER ELEVATION.

FIG. 6. GRAVEL PIT EXCAVATED WITH ONE-AND-ONE-HALF-YARD BUCKET. FALL, 1912.

ferent shifting devices are installed to meet the peculiar conditions and requirements of each pit. Some cases require only a simple shifting device, while in others, where the stripping or gravel deposit is shallow and frequent shifting of the track cable is required, a more elaborate system is installed.

High Water Helps Sand Production.

Pittsburgh, Pa., Aug. 19.—So far as high water is concerned this has been a good year for the sand companies in the Pittsburgh district. Abundant rains have kept all three rivers navigable practically all the time. On the other hand, there have been no bad floods. For this reason local companies have been able to use their river boats and diggers almost every day. Most of these concerns report a fair to good business. Prices are very badly cut. Truck and wagon trade in parts of the city is better than last year. Carload lots have been going out good to certain districts, but other places show quite a falling off in this branch of the business.

The Rodgers Sand Co. has bought six acres of ground at Squaw Run, near Springdale, Pa., on the Allegheny river. The company has already started work on a siding there and will dredge out a harbor at that place for its boats to make it one of its leading shipping points for sand and gravel.

The Keystone Sand & Supply Co. is operating its splendid plant on Neville Island, in the Ohio river, below Pittsburgh, at nearly full capacity. All its business there is in carload lots. Prices, the company says, are very badly cut.

The Winfield Sand & Mineral Co. reports fair operations at its plant in Butler county, Pa. The company is shipping glass sand steadily. Manager McKee, of the local office, is on vacation this week.

The Iron City Sand Co. reports business brightening up quite a little. Most of the sand sold is for building purposes. Prices are about the worst ever known. All the company's boats and barges are working steadily.

J. K. Davidson & Bro. report their wagon and truck trade better than in 1914, but say that the carload trade isn't quite so good. Trade in building sand is quite satisfactory and a large amount is also being sold for heavy construction contracts. The company has recently secured one big river contract, which will add much to its business this summer. It reports the outlook for fall as pretty satisfactory and believes that by Dec. 1 business will be going at full speed in this district.

NEWMAN AND BRIDE TOURING EAST.

Charles M. Newman, general manager of the Newman Sand Co., was married to Miss Jessie Thomas at Louisville, Ky., on August 19. Following the ceremony the young couple left immediately for the East where they will spend their honeymoon.

The sand secured by the Guyler Sand Co. from the Youghiogheny river, is in splendid demand this summer for use by molding firms. The company has large orders with Westinghouse concerns.

The sand plant of Thompson, Pa., is being rebuilt by E. T. Mowris Co., capitalists of Johsonburg, Pa.

NEW SAND AND GRAVEL INCORPORATIONS.

The Columbus Gravel Co., St. Charles, Ill.; capital, $35,000; incorporators, Charles L., Edward M., and E. G. Hunt.

The Greenville Gravel Co., Fort Jefferson, Ohio; capital, $240,000.

G. C. Penny & Co., Detroit, Mich.; capital, $2,500; to deal in sand, gravel and other building materials; incorporators, George C. Penny, Maynard D. Smith and Charles A. Gray.

Petersburg Sand & Gravel Co., Petersburg, Va.; capital, $5,000 to $15,000; to own and operate sand and gravel lands; officers, M. A. Finn, president; D. Perkinson, vice-president; David Alexander, secretary and treasurer, all of Petersburg.

The Noll Sand Co., Marietta, Ohio; capital, $25,000; to deal in sand and gravel; incorporators, M. F. Noll, M. Noll, A. H. and Henry Everly.

Sandy Creek Sand & Stone Co., Grafton, W. Va.; to produce white sand for concrete, also white building stone; incorporators, F. C. Graham, R. M. Parish, Hames A. Sincell.

Nickle Plate Gravel Co., Erie, Pa.; capital, $25,000; incorporators, Martin, Henry E., James G., J. Ross Mayer and W. L. Scott, of Erie.

Gibson Corporation, Casenovia, N. Y.; capital, $25,000; incorporators, Malcolm D. and Hannah P. Gibson, Elmira, N. Y., and James R. Ratchford, Syracuse, N. Y.

Ajax Sand Co., Erie, Pa., capital, $10,000; incorporators, T. B. Ely, William L. Scott and H. W. Flowers.

New England Sand & Gravel Co., Peabody, Mass.; capital, $100,000; incorporators, Paul M. Wagner and others.

Illinois Gravel & Material Co., Joliet, Ill.; capital, $40,000; incorporators, Frederick D. Tucker, Walter L. Follett, and Porter Pickett.

Altair Crushed Stone & Gravel Co., Altair, Tex.; capital, $200,000; will build a plant to cost about $40,000; incorporators C. E. Scronce, of Columbus, Tex., and others.

Riverside Sand Co., Charlotte, N. C.; capital, $10,000; incorporators, E. H. Clement, R. O. Jennings and W. H. Hood.

Neumann Sand & Gravel Co., 30-34 S. Newberry street, York, Pa..

The Fairview Sand & Gravel Co., Vancouver, B. C.

FIG. 7. SAME GRAVEL PIT AS SHOWN IN FIG. 6. FALL, 1913. DEPTH OF WATER, 30 FEET.

SAND-LIME BRICK

TO BUILD BIG PLANT.

New Orleans will be the home of one of the largest sand-lime brick factories in the country, work on which begun Aug. 2. This plant will be that of the New Orleans Silica Brick Co. and will be located on the New Basin canal in the vicinity of Murat street.

The main building of the plant will be 50 by 160 feet and the factory will give employment to 100 or more men as soon as it opens. It is stated by the officers of the company that the plant should be completed within the next four or five months.

The president of the company is James H. Dyett; Frank Bowers, a large contractor of New Orleans, is vice-president, and Lionel M. Ricau, a real estate operator, is treasurer.

Some time ago the Association of Commerce conducted an investigation as to the possibilities in New Orleans for a sand-lime brick plant, and it was found that the sand of Lake Pontchartrain, according to government statements, is of superior quality, suitable for the manufacture of this kind of brick. In addition, the association was advised by architects throughout the country who have used sand-lime brick, that it is a highly desirable building and decorative material and it has been used with great success in almost every part of the country.

The New Orleans Silica Brick Co. has made arrangements to make use of a large fleet of tow boats and dredges to obtain a sufficient supply of sand to operate the plant to its capacity, about 75,000 bricks per day.

SILICA BRICK CONCERN FORMED.

The Cuban Silica Brick Co. has been reported by the New York Journal of Commerce as having been formed with a capital of $350,000. The concern is to manufacture sand-lime brick, glass, artificial stone, tile, etc.

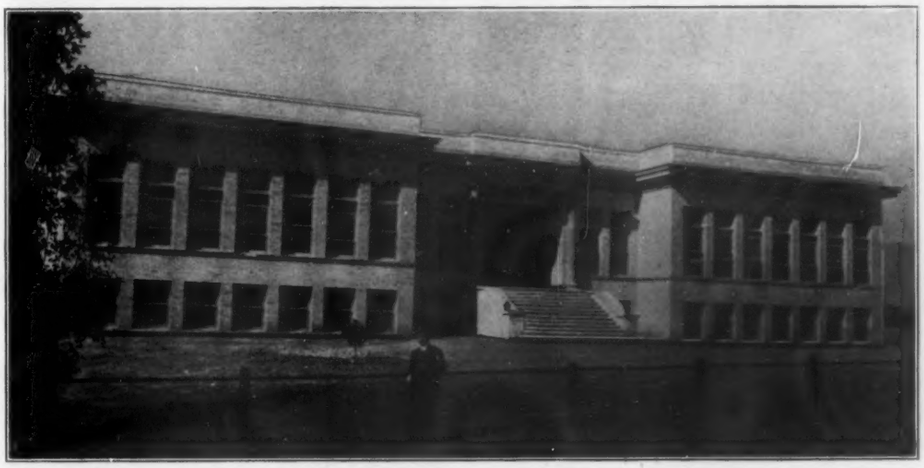
TO BUILD SAND-LIME BRICK PLANT.

Buffalo, N. Y., Aug. 5.—Of late there is a considerable effort to bring in sand-lime brick as a competitor of the old burned clay brick. A special drive at the Buffalo trade is about to be made with it by the West Lake Brick & Products Co., which is preparing to build a plant at West Lake, in the Picton district of Canada, on Lake Ontario. The company has moved its business headquarters to Buffalo and will run an excursion from here on Aug. 12 to witness the breaking of ground at West Lake on the next day. Manager L. V. Stevens states that brick will be turned out by the end of autumn. It is claimed that a fine quality of brick can be produced at a very moderate cost.

CALIFORNIA SCHOOL OF SAND-LIME BRICK.

One of the prominent structures in Dela Rosa, Cal., is the city's grammar school. It is a two-story structure, equipped with a pretentious entrance in the center of the building, in addition to other entrances on the ground floor.

The school building was constructed of sand-lime brick manufactured by the Standard Brick and Tile Co., of Colton, Cal.



DELA ROSA, CALIF., GRAMMAR SCHOOL CONSTRUCTED OF SAND-LIME BRICK.

TRAFFIC NEWS

WILL INVESTIGATE WESTERN CEMENT RATES.

To enable it to get a view of the whole cement rate structure in Western Trunk Line territory and its extensions into adjacent freight rate areas, the Commission, on Aug. 5, issued an order, in Docket No. 8182, instituting a general inquiry into that subject. Individual formal and informal complaints and several investigation and suspension docket numbers deal with phases of the subject that overlap and make desirable such a general inquiry as has been ordered. Under No. 8182 will be considered the following:.

I. and S. Docket No. 257—Iowa-Minnesota cement rates.

I. and S. Docket No. 339—Cement rates from Mason City, Ia.

I and S. Docket No. 406—Freight rates between points in Minnesota via interstate routes and between points in Minnesota and other states.

I. and S. Docket No. 408—Cement rates between points in Illinois and points in Minnesota and other states.

I. and S. Docket No. 463—Cement rates from Duluth, Minn., Mason City, Ia., to stations on the Midland Continental Railroad.

I. and S. Docket No. 382—Cement rates from Mason City, Ia., to Beach, N. D.

No. 5914—Newaygo Portland Cement Co. vs. Chicago, Milwaukee & St. Paul Railway Co. et al.

No. 7138—The Atlas Portland Cement Co. vs. Same.

No. 8019—Iola Cement Mills Traffic Association et al. vs. the Atchison, Topeka & Santa Fe Railway Co. et al.

The cases that have been decided are ordered to be reopened for further hearing in connection with the inquiry so instituted, but the rates ordered in are to remain in effect while the inquiry is proceeding. If, when the investigation is completed, the Commission deems desirable any modification in the orders heretofore issued, they will be made.

FEW ADVANCES ALLOWED.

On Aug. 11 at Washington, D. C., the Interstate Commerce Commission handed down a report in what is known as the Western rate case. A number of schedules had been offered for the commission's approval, and comparatively few of them were approved. There were twelve rulings, each on a particular subject, and directly or indirectly having to do with rates. The railroads lost out in most instances. Following are summaries of the various decisions:

1. Increased carload rates on grain and grain products considered as one commodity not justified.
2. Increase from 30,000 pounds to 40,000 pounds in the minimum carload weight of grain products justified.
3. Increased carload rates on live stock not justified.
4. Increased carload rates, on packing house products and fresh meats, except as indicated between points on the Missouri river, not justified.
5. Increased carload rates on fertilizer and fertilizer materials, not justified.
6. Increased rates on bituminous coal, except as to South Dakota points, justified. The rates on coke here proposed, which are the same as on coal, justified.
7. Increased carload rates on brewers' rice and less than carload rates on domestic rice justified.
8. Increased carload rates on broom corn not justified.
9. Increased import rates and proposed increases in carload minima from gulf ports justified.
10. Increased carload rates on fruits and vegetables justified.
11. Increased carload rates on hay and straw, where not in excess of Class C, justified.
12. Increased any quantity rates on cotton piece goods and proposed increased carload rates from points in Texas, not justified.

The Decatur (Ill.) Brick Co., has filed a complaint against the Ahnapee & Western Railway Co., et al., charging unjust and unreasonable rates on building brick, paving brick and hollow tile or fireproofing in carload lots from Decatur, Ill., to points in Michigan, Wisconsin and Indiana. The company asks for a cease and desist order and the establishment of maximum rates.

The Sunderland Bros. Co., of Omaha, Neb., have filed a complaint against the C., R. I. & P. Ry. Co., et al., charging unduly high and discriminatory L. C. L. rates on cement plaster from Laramie, Wyo., to Kimballton, Ia., stopped for partial unloading at Elkhorn, Ia. The company asked for a joint through rate from Laramie to stations on the Rock Island in Iowa and other points and also demands reparation.

The Colorado Portland Cement Co. has filed a complaint against the rate of $1.59 per 100 pounds on parts of stone crushing machinery from West Allis, Wis., to Portland, Colo., charged by the C., M. & St. P. Ry. Co., et al. The company claims that the rates are unjust, unreasonable and excessive and asks for the establishment of just and reasonable rates and reparation.

GYPSUM PRODUCTS

Stripping Gypsum Quarries in Canada

(Continued from August 7 Issue.)

A method that has been employed successfully in northern Manitoba is to remove the overburden by horse scrapers similar to those used in railway construction work, the nature of the deposits there lending itself admirably to this mode of operation. The surface covering in these northern deposits consists of about three feet of clay and loam, loosely cemented by gypsum, and this material readily breaks up before the scraper, and can be hauled and dumped into any of the numerous sinkholes which are scattered through all the deposits. This has proved a very satisfactory method for the removal and disposal of the waste material.

Steam Shovels Becoming Popular.

In the larger quarries, the steam shovel is gradually coming into use, but to any extent only in late years. Where the overburden is of any great thickness, the waste material is removed in benches by the steam shovel working on the top of the deposit, and loaded directly into cars on a track laid alongside the shovel, and the shovel loads directly into cars, which can then be hauled to wherever the best dumping ground is available. This method proves satisfactory to a certain extent, but considerable material is allowed to fall into the quarry, there to be removed by hand, or else by a second shovel. Another method, sometimes employed, in the case of a bench of gypsum, is to operate the shovel on top of this bench, and then clean off the bench by hand and carts. This method leaves the greater portion of the gypsum free from danger of being mixed with the waste material.

As this overburden is in all cases composed of loose material, it would seem that hydraulic stripping would not only, in many quarries, be feasible, but would also greatly reduce the time required and the cost in hauling.

Unlike the methods required and employed by most of the large hydraulic mining companies of the West, these used for the purpose of removing the surface coverings to enable the rock underneath to be mined or excavated, have to be greatly modified to meet the altered conditions. In the first place, the wash from the monitors does not have to be saved, and hence the material can be conveyed in sluices greatly simplified from those which have to be prepared for the gold-bearing gravels. The shortest and most convenient form of sluice leading directly to the dumping ground will answer the purpose, regardless of slope (or grade) or curves.

Then, again, in most cases, when used for the stripping of gypsum, the nozzle pressure of the water would have to be obtained by means of a high pressure pump of large horse-power, and although this would be the greatest expense of the whole installation, it would do away with an expensive pipe line, as the contour of the country is not such as to enable a high head of water being obtained except by this means.

The supply of water required would be one of the greatest factors in the installation, but this, in most cases, could be overcome by using the water over and over again.

The matter of a dumping ground for the waste material would be one of considerable difficulty, especially where the material was to be sluiced directly to it, but if no convenient space were available for direct sluicing, the waste material could be readily handled by a pipe line and a relay of centrifugal pumps, which would place it in any of the old abandoned quarries near by.

LOUISVILLE PLASTER BUSINESS NORMAL.

Louisville, Ky., Aug. 19.—The local wall plaster concerns are not overly rushed just now, but are operating almost to capacity, and business is about normal for this time of year. The building permits taken out during the past few weeks have not been as numerous as might be, but several contracts have been for large quantities of material.

W. Selke, president of the Atlas Wall Plaster Co., has been very busy during the past three weeks, and reports that the plant is operating overtime, and extra teams have been employed in order to make prompt deliveries. Most of the orders have been for small amounts, but they have been numerous. Mr. Selke recently returned from a short week-end motor trip through the blue grass section of the state.

W. P. A[illegible]non, of the Standard Wall Plaster Co., said that he was working along nearly to capacity, but that the concern could handle a good deal more business than it was doing. Plans are still being considered to build an addition for the purpose of carrying a general line of plasterer's tools and supplies.

RECENT INCORPORATIONS.

The Waterproof Plaster Key Co., Chicago, Ill.; capital, $2,500; William A. L. Schaefer, Albert A. Foster and Albert Goetz.

The Aluminum Plaster Co., St. Louis, Mo.; capital, $10,000; to manufacture a patented plaster; will erect plant at Twenty-ninth and Illinois avenues, St. Louis.

The Norwegian Steamship Haakon recently arrived in the port of Chester, Pa., with a cargo of gypsum rock from St. Ann's, Cape Breton, Nova Scotia. The ship was several days overdue, having run aground off Munroe's Point, Nova Scotia, and in order to float the vessel 150 tons of its cargo, which was consigned to the Keystone Plaster Co., of Chester, was thrown into the sea.

The National Plaster Co., Kansas City, Mo., has issued and is now distributing a particularly attractive and effective piece of advertising, a booklet emphasizing the value of cement plaster, touching on the romance of the industry and its historical phases, liberally illustrated. Part of the booklet consists of directions for using, and specifications. The title of the pamphlet is "The Reason Why," and the entire contents indicate the concern's reasons why "National" and "Oriental" cement plaster should be used. Incidentally, the unique cover presents for the first time the new trade mark of the company, the monogram NPCo imposed on the dome of the national capitol, surrounded by stars, and the words, "As strong as the nation."

Up-to-the-Minute Advertising.

"Are you up to the minute?" asks the C. A. Hertenstein Lumber Co., Chillicothe, Ohio, on its latest advertising folder. Above these words is the picture of a clock and below the timepiece is a plasterer at work, covering a plaster board wall with a coating of plaster.

The two center pages show a man at work applying plaster board to studdings and an oval space, allotted for the purpose, contains arguments for a particular make of board and walls plastered with material of a well-known brand.

The strongest argument on the folder states that walls built of the board and plaster carried in stock "are not here for just today or tomorrow or ten years hence, but they stand eternal for your children's children."

The United States Gypsum Co. has declared the quarterly dividend of one and one-half per cent, payable Sept. 30, to stockholders of record Sept. 15.

Economy Feature Makes Trucks Popular.

"The constantly increasing use of motor trucks is due to the fact that business men who take the pains to study their haulage problems must invariably conclude that efficiency and economy can only be achieved by sending Dobbin 'back to the farm',' says John R. Buck, of the Kissel Kar.

"Not that the horse hasn't his place in the world's work—he has. But, as a sole reliance in delivery service, he is permanently and definitely a 'has been.' He hasn't the speed, the strength or the stamina to keep up with the demands of the time. And when all the items are figured up, he is also more expensive to maintain.

"Some business men do not yet see beyond the fact that a motor truck costs more than horses to start with. They do not stop to consider the greater carrying and ground covering capacity of the truck—for instance the fact that a truck will travel 21 to 25 miles while a horse-hauled carrying equivalent is going seven or eight miles.

"It is a common thing for a Kissel Kar truck to travel 15,000 to 20,000 miles a year and they could do three times that if used beyond the usual eight or nine hours. On the other hand, it is a mighty good horse, as every one knows, that will do 5,000 miles a year."

A CORRECTION.

In the Aug. 7 issue, on page 5 in the advertisements of the Kissel Motor Car Co., of Hartford, Wis., a typographical error was made. In the first line of the list of prices a decimal was placed incorrectly, the amount being $950.00 instead of $9.50. The Kissel Motor Car Co. have a well-established reputation for quality and reasonableness of price, but one could scarcely expect them to sell their well-known thousand-pound truck for the figure incorrectly printed.

C. W. Coburn & Co., 320 Market street, San Francisco, Cal., has purchased the interests of E. A. Bullis & Co. in "Carbite" and in their dry mortar colors. They also take over the agency of the Federal Steel Cement Mills, which includes a cement hardener and the Federal Elastic Compound.

CLAY PRODUCTS

Eastern Manufacturers Worried.

New York N. Y., Aug. 19.—Eastern common brick manufacturers, especially those having plants in the Hudson district, are worried over the outlook. William K. Hammond says that there probably has not been a manufacturer along the Hudson river who has made any money in the last two years. Conditions have been abnormally bad this year, he says. One reason for this is the heavy rains which has interfered with brick making. Strikes have paralyzed the business at Haverstraw. Market prices have been forced low. Raw materials have gone up. Building has been slack, coupled with heavy competition from other materials that have been having a price war.

There has been talk of a general closing down this month along the Hudson river. The Raritan plants already have curtailed their outputs. But it now seems probable that the Hudson companies will continue to manufacture at least up to the middle of September, owing to the fact that wet weather has not permitted them to make brick in quantities sufficient to give them a sufficient reserve for winter. The marked improvement in inquiry for building materials from general contractors in the last fortnight leads some of the biggest producers to believe that a bigger reserve than 600,000,000 will be required between now and next June. It is not the desire of the manufacturers to force prices to unusually high levels, but they want a chance to make a profit on what they do sell. Therefore they do not want an over-supply any more than they are inclined to contribute to an undersupply.

In the last two years New York and vicinity has taken approximately 800,000,000 common brick. The maximum output for the Hudson river district is 1,200,000,000 a year. The total movement of common brick from Jan. 1 to Aug. 7 this year was 358,000,000 as against 330,750,000 received at the wholesale docks in the same period last year. Here is shown a gain of 28,000,000 common brick, but the average price per thousand, wholesale, this year, has been $5.35 as against $5.60 last year. Taking the movement of 358,000,000 during the first eight months, there is here indicated a total consumption for New York for the year of approximately 550,000,000 common brick, which reflects the falling off in building construction. The total consumption of Hudson common brick in this market in 1914 was 581,000,000, the biggest call being in the latter part of the year. Last year was not so good for building in the second half at least as this year promises to be, so that it is safe to assume that the total requirements this year will be somewhere around 600,000,000 or one-half the normal production for the district.

The total amount of left-over brick from last year still in the Hudson river sheds is approximately 150,000,000. Haverstraw has been shut down nearly all summer. Newburgh and Kingston manufacturers have been operating at about half their capacity. This makes the total quantity of common brick available for New York consumption between the present time and the opening of the 1916 brick making season next June between 550,000,000 and 600,000,000 which is just sufficient to carry the market over to spring if present building conditions prevail. Prices, based upon such a supply and upon present building plan filings, or $12,000,000 worth a month, should make the price here during the winter between $6.37½ and $6.75.

If, however, there should be a marked improvement in building construction so as to call for an extra large quantity of brick, and the price of Portland cement, structural steel, lime, plaster and other equipments advance so as to eliminate competition with other materials that can be used as substitute for brick in emergencies, the price will be in the neighborhood of $7.00, at which level Connecticut manufacturers can ship brick into certain parts of the market.

These are facts which the Hudson river brick manufacturers have been considering. Their decision probably will be to gradually diminish their outputs and to close down for the season with a moderate supply along about the middle or end of September. If, however, building conditions improve, this program may be changed. The majority of them prefer to be governed according to circumstances.

News from the Field.

O. H. Parker, of Sebree, Ky., is now sole owner of the Eastwood Ferry Brick & Tile Co., of Eastwood, Ky., near Sebree. He recently purchased the interest of his partner, T. A. Semple, in the concern. The first kiln of brick was recently turned out by the concern, and it proved highly satisfactory.

The Key James Brick Co., of Chattanooga, Tenn., recently booked orders for deliveries of over a million brick inside of one week. All of these brick were for out-of-town concerns. One order for 600,000 brick will be used in the new Connally office building at Atlanta. Other orders were for buildings at Albany, Ga., and Charleston, S. C.

The East End Brick Co., of Louisville, Ky., has passed out of existence as a corporation and is now being operated by P. M. Crane, former secretary of the company, and E. R. Bassett, owner of the plant, under a partnership agreement. A. B. Hillenbrand, Jr., general manager of the company, has resigned, and will shortly make other connections. The plant, which was closed in April, resumed operations during the first week in August. The clay beds on the property which the plant occupies have been exhausted and it is now necessary to haul the clay from nearby deposits.

The Jackson-Eagleton Brick Co. is a new concern of Maryville, Tenn., which has been organized with the intention of putting up a brick plant with a capacity of 50,000 to 100,000 brick daily.

The Pennsylvania Brick Co., of New Hope, Pa., concluded the necessary preliminaries to the taking over of the farm of the late Eastburn Reeder, in Solebury township, thus removing the last obstacle in the way of beginning work upon the vitrified brick plant. Rights of way and other necessary lands have been purchased, so that it will be possible to extend a branch of the railroad all the way through the Reeder farm, which is nearly a mile from the station.

The Coral Ridge Clay Products Co., which maintains an office in Louisville, Ky., and operates a plant at Coral Ridge, Ky., a few miles from Louisville, has just announced that the company has entered the face brick field, and has put on the market two fancy face brick in addition to the plain and hollow brick already made. One of these new bricks is known as the "Coralmatt," while the other, which is considerably rougher, will be known as "Coralruff." These brick are made of shale, and are burned to very handsome reddish shades. This is the first time that a shale brick of these types has been made in Louisville, and it is generally conceded that the new lines will take well. A low freight rate between the plant and Louisville makes it possible for the company to deliver on the ground at a very reasonable figure.

The P. Bannon Pipe Co., of Louisville, Ky., which manufactures sewer pipe, fireproofing, common and face brick in its various plants, is now making steady deliveries on a number of nice jobs about the city. A. P. McDonald, sales manager for the company, is expecting to handle a good deal of fireproofing material for some of the large buildings which will be erected in Louisville this fall. Very few contracts of any importance have been placed during the past few weeks, but the outlook is exceptionally good.

The Kirchner Brick Co., of East Fultonham, O., which formerly had sales offices in Cincinnati where its several lines of face brick were handled, reports that it is doing a considerable amount of remodeling at its plant, in order to increase the capacity to a point where growing business can be adequately taken care of. The company's selling work is now conducted from East Fultonham, representation in most of the larger cities through well-known retail material concerns having been secured.

The work of rebuilding the Champlain Brick Co.'s kiln shed at Mechanicsville, N. Y., is progressing rapidly, and 200 of the 500 feet destroyed are nearly completed. A new brick office, to replace the frame structure destroyed, has been completed, and the work of rebuilding the dry kilns will be started as soon as the lumber arrives.

The plant of the Abilene Pressed Brick Co., located at Lanius, five miles north of Abilene, Texas, and which was burned about one year ago, will be rebuilt at once, according to the announcement made by E. B. Bynum, president of the company. C. W. Williams, of San Antonio, has been employed as superintendent.

N. B. M. A. DAY AT THE PANAMA-PACIFIC EXPOSITION.

In response to an urgent request of the Panama-Pacific International Exposition officials for a meeting of the National Brick Manufacturers' Association at San Francisco during the great exposition there, it has been agreed that a midsummer meeting will be held, not a convention, but just a social gathering of those who can make it convenient to visit the exposition the last week in August. In honor of the event, the Panama-Pacific International Exposition officials have announced that Aug. 26 has been officially designated as "National Brick Manufacturers' Association Day," and will prepare a program for the occasion that will make it one of great interest.

The function will, no doubt, center about the model brick home erected under the direction of the Panama-Pacific Clay Products Association. It is expected that every clay-worker who visits the exposition will make the brick home his headquarters while there. They will find an attendant in charge, who will extend every courtesy circumstances will permit. The pleasure of a visit to the great exposition will be enhanced immensely by the meeting of friends and acquaintances in the industry. All who can are urged to be there Aug. 26 and participate in the celebration of Brick Manufacturers' Day.

Radial Brick Sewer at Santa Monica

The plans for the improvement, recently completed, of Colorado avenue, between Ocean avenue and fourth street, Santa Monica, Cal., included the construction of several storm drains, in which were largely used a new type of sewer brick.

SECTION OF RADIAL BRICK SEWER, SUPPORTING 27,000 POUNDS.

The district drained by these storm sewers comprises about 151 acres, lying southeast of Wilshire boulevard and southwest of Seventh street. The low point of this district lies at the southeast side of Colorado avenue, opposite Second street, which does not extend across Colorado avenue. At this point, the catch basin in place has been rebuilt to the new grade of Colorado avenue, and the storm sewers from Ocean avenue, Second street and Third street lead into it.

The two former drains are circular and of 24 inches diameter; the sewer carrying the Third street water is circular, of 30 inches diameter, and constructed of the new type of sewer brick, known as the Frost radial interlocking brick. The water coming down Fourth street, Fifth street, Sixth street and Colorado avenue is caught at the intersection of Fourth street and Colorado avenue and is carried in a 36-inch circular culvert, also constructed of radial brick, and thence southerly along Fourth street to a catch basin in place near the Pacific electric right of way, where it is taken by an old culvert and diverted into an arroyo. One of the illustrations shows a portion of the radial brick construction looking towards the point of discharge into the arroyo.

The Frost radial interlocking brick is slightly wedge-shaped and so designed that it forms a perfect arch with a very thin mortar joint. Each brick has tongue and groove, so that when set in place, the brick are firmly locked radially in the arch, and are bonded together lengthwise, the brick being laid "shoved up," which forces the cement mortar into the longitudinal holes in the brick, thus forming rigid dowels. These brick show an exceptionally small percentage of absorption and by reason of the longitudinal openings are thoroughly burned throughout.

On the Colorado avenue work it was decided to use this type of construction in the 30-inch storm drain leading from Third street to the catch basin at Second street, and in the storm sewer running down Fourth street from Colorado avenue. This brick was also used in the 24-inch circular culverts connecting the intake with the main drains at Third street and Fourth street.

A single ring of No. 1 brick, five and one-quarter pounds, three and one-half inches thick, was used in the 24-inch and 30-inch sewers, and a single ring of No. 5 brick, six and one-quarter pounds, four inches thick, was used in the 36-inch sewer. The 30-inch sewer was laid on a 1.75 per cent grade and is 347 feet long. The 36-inch sewer is laid on a two per cent grade and is 398 feet long. The connections total 155 feet, making a total length of this type of construction of approximately 900 feet, under conditions which gave a fair test of the adaptability of this brick and its usefulness in the construction of large diameter sewers.

The novelty of this type of construction caused the masons some difficulty at first, but later very good progress was made. The average for the entire job on all sizes of sewers was 1,800 brick per day. The highest daily rate was 2,752 brick. The contractor had no difficulty in meeting all specifications and opinions of competent observers express highest satisfaction with the finished sewers.

These sewers were designed and constructed under the supervision of John A. Morton, city engineer of Santa Monica, authority for the foregoing data. The contract was executed by the J. D. Kneen Contracting Co., of Santa Monica.

The radial interlocking brick was invented by Chas. H. Frost and is manufactured by the Los Angeles Pressed Brick Co. It is designed to provide a cheaper type of construction for large diameter sewers, in which are now used either common brick or reinforced concrete. The manufacturers believe this new brick will save probably half the cost of material in large storm drains.

One of the illlustrations shows a small section of sewer four feet in diameter, built for test purposes. The section is sustaining a load of 27,000 pounds. It was built at the company's plant in January, 1914. After the brick work was completed, loose dirt was filled in and the load was placed directly over the sewer. During the period of unprecedented rains of February, 1914, the dirt around the sewer became so soft that there was but little support, and the water ran down into and submerged the sewer, yet no damage occurred and the test section is still standing with the load upon it as shown in the photograph.

Mr. Frost entered the brick manufacturing business in 1877 when he organized the firm of C. H. Frost & Co., in Chicago, Ill., making at that time a patented dry pressed brick. In 1887 he moved to Los Angeles and organized the Los Angeles Pressed Brick Co. and was its president until January, 1914, when his son, Howard Frost, succeeded him. The first patent on the Frost radial sewer brick was issued April 21, 1914.

RADIAL BRICK STORM DRAIN UNDER CONSTRUCTION.

WAR PUTS QUIETUS ON GERMAN TILE INDUSTRY.

The war is exercising a destroying influence on the tile industry in Germany, which has practically come to a standstill on account of the decrease in building operations. Dortmund, a large center for the tile industry, delivered during the first four months of this year 6,000,000 tiles, against 27,000,000 during the same period of last year. These figures show clearly the disrupted state of affairs in the German tile industry. The stocks, especially at Detmold and Hamm, are very heavy. Notwithstanding the slow demand and the large stocks, manufacturers are asking more money, as prices of the raw material and labor have advanced bout 10 per cent since the outbreak of the war.

LONGEST GARDEN WALL TO BE OF BRICK.

What will be the longest and most costly "spite fence" or garden wall is in the course of construction on Melody farm, the country estate of J. Odgen Armour near Lake Forest, Ill. The structure is being built in order to shut out a view of a railroad track a quarter of a mile from the Armour residence. Objection is taken to the unsightly train loads of box and coal cars which pass frequently on the tracks.

In order to secure complete privacy, a gang of workmen are busy erecting a huge brick wall which will be a mile long when completed and cost about $65,000. The wall is of the panel brick type, standing seven and one-half feet from its concrete foundations which in some places extend 10 feet below the ground.

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"It Comes from Milwaukee"

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for driving your conveyors, elevators and screens

In Your Plant or Mill

Pin bent to breaking point. Extreme bend shows toughness and cracking the hardness of surface.

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Send for Catalog 54-P, giving complete tables and information

CHAIN BELT COMPANY, 16th Street **Milwaukee, Wisconsin**

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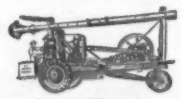

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We make the "CLIPPER"—The drill that is USED!

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Whitehall Cement Manufacturing Co.
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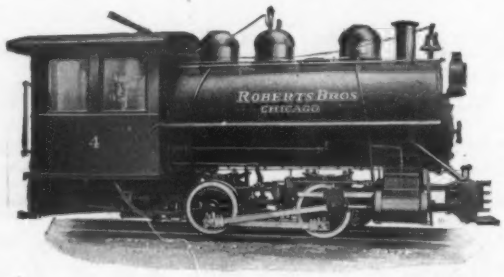

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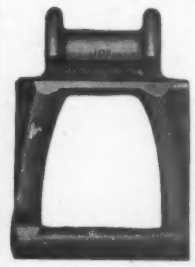

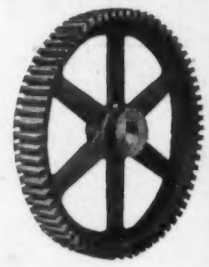

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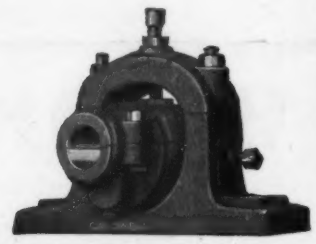

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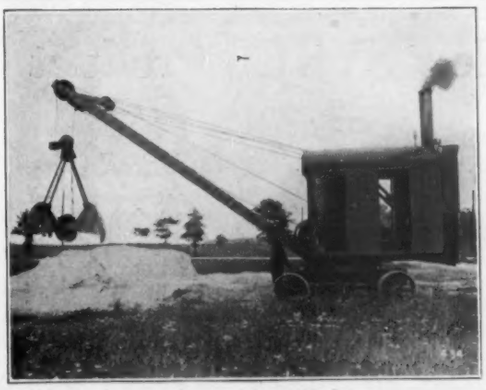


Steam, Gasoline and Electric Shovels
Deep Water and Dipper Dredges

OSGOOD "18"

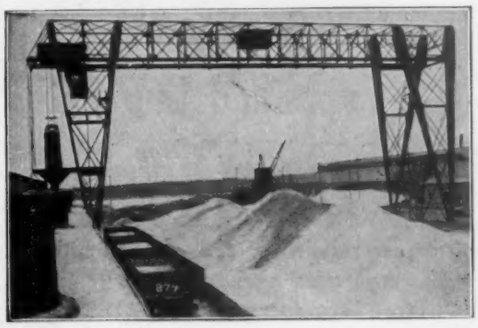
¾-yd., 25-ft. Boom Traction Revolving Clam Shell

This outfit is specially adapted
for loading and unloading cars

The machine can be used for crane service by removing bucket and attaching lifting block.

Full information cheerfully furnished

THE ~~MARION~~ OSGOOD COMPANY, Marion, Ohio, U. S. A.



Sand Handling Gantry Crane equipped with a man trolley, 4-line, two yard Clam Shell Bucket, and rigidly attached hopper to guide the material into the storage reservoirs.

You Can Reduce Your Handling Costs

by the use of proper equipment for your work, which should easily and economically handle the material it was designed to take care of. That is why the Edward Ford Plate Glass Company, of Toledo, O., chose a

"McMyler Interstate Gantry Crane"

to take care of unloading sand from cars to stock pile, and then to the mill, as same is needed.

The McMyler Interstate Co. Dept. P-3 **Cleveland, Ohio**

New York **London** **Chicago**

PRODUCTS—Locomotive Cranes, All Type Buckets for every purpose—Elevating and Conveying Machinery, etc.

Are you interested in

Minimum Cost

In the Storing and Handling of Your Materials

The C. R. S. Locomotive Crane
Is built to help solve your problems and increase your profits!

POWER **SPEED**
ACCESSIBILITY OF PARTS
Simplicity of Construction
LARGE CAPACITY
Low Cost of Operation and MAINTENANCE, Etc.

Are Points That Should Interest YOU

We will be pleased to offer suggestions on your problems

The Cleveland Ry. Supply Co.
CLEVELAND **OHIO**

Goodrich belts give me greater tonnage per first cost — that's one of the ways they cut my tonnage cost.
— Supt Wise

The oftener you have to buy a Conveyor Belt—the higher goes your cost per ton for moving material. It is logical for you to want belts which will give the *longest* possible service.

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Goodrich LONGLIFE CONVEYOR BELT

This belt is a combination of perfect flexibility with strength, perfect edge construction, wonderful wearing rubber cover and exact balance of cover, friction and duck. It is made in the largest rubber factory in the world. The size and broadness of the Goodrich business alone indicates we *must* give exceptional goods and exceptional service to get where we are—and stay there. We have solved conveyor cost problems in great plants all over the earth. It will pay you to **"Get in touch with Goodrich."**

Goodrich Products:

Conveyor Belts	Hose—all kinds
Elevator Belts	Packing
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The B. F. Goodrich Company
Factories: Akron, Ohio
"Get in touch with Goodrich"

A New SYKES Product

Lohmannized Lead-Coated
METAL LATH
(coated after expansion)

Lead Coating will resist acid better than any other coating, better than galvanized. This is, we believe, the best metal lath that can be produced at reasonable cost. It is, of course, on the famous

SYKES **Expanded Cup Lath**
Self Furring

model and so saves money and time because no furring strips are required. This type of lath is much heavier than other makes cut in the same gauge—**therefore stronger, for added weight gives rigidity and durability.**

Architects—Contractors—Dealers
Send for free sample of this new
LEAD-COATED SYKES METAL LATH
—prove for yourself by any test that the lead will not peel or scale; remember that **lead adds durability.**

Best for Interior Work—Best for Exterior Work. Sykes Metal Lath is approved by U. S. Government for Post Office Work; indorsed by architects.

Write for Free Sample and booklet—there's both Durability and a Saving to be gained by using Sykes Metal Lath.

Sykes Metal Lath & Roofing Co.
508 Walnut Street Warren, Ohio

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A new idea is back of GF Waterproofing —the idea of intelligent service to the consumer, service that cuts down the dealer's selling cost to the low limit.

The Handbook in accord with this policy is primarily a book of specifications, classified and listed so that the most effective method for typical conditions can be readily located. It has little to say for the superiority of GF Products. The conditions, the methods, are all important.

Yet the line, with its twenty-four products in all, is so complete that there is a product especially suited to almost any condition you'll meet. GF dealers are equipped to get all the waterproofing business on a job.

A copy of the new Waterproofing Handbook will be sent free at your request. It will introduce the "Service First" idea and we'll go into the details of the dealer contract if you're interested.

The General Fire Proofing Co.

1980 Logan Avenue

Youngstown, Ohio

THE PROFIT COLUMN

AUGUST 22, 1915

For readers of ROCK PRODUCTS AND BUILDING MATERIALS

AN EASY PROBLEM

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In the handling of damp-proofings, Can-O-Co Damp-proofing is of the highest possible quality, its many satisfied users have established its reputation and recognized durability—and the cooperation of its manufacturers assists the dealers greatly in increasing its sale.

Have you accepted this opportunity? Our dealers' proposition will be mailed you on request.

The Canfield Oil Co.

CLEVELAND OHIO

You Will Need a Stock of CERESIT to Supply the Fall Demand

Fall and Winter are when concrete, cement and stucco bear the hardest abuse of seepage, leakage, etc. Architects and engineers now recognize Ceresit's ability to make work of this nature *absolutely water-tight and dry*, and are incorporating it in their specifications for *Fall and Winter jobs*. That means a big, steady demand for Ceresit Waterproofing Compound *from you*—good, attractive profits *to you*.

And These CWCo. Products are always in demand:
Damp-proof Plaster Bond
Damp-proof Coating
Stone Backing
Weather-Wear Roof Coat
Ceresitol
Floor Hardener

You Get This Help

You receive co-operation in many various ways which enables you to make *quick, easy sales*. Architects have come to regard our engineering department as an adjunct to their business and place great confidence in our experts by letting them solve all their waterproofing problems.

Let us outline to you in detail *Ceresit Service*

Ceresit Waterproofing Co.
924 Westminster Bldg. Chicago

CERESIT
TRADE MARK REGISTERED

Saylor's Portland Cement

THE FIRST PORTLAND CEMENT MANUFACTURED IN AMERICA

Estab. 1866

Centennial Award Philadelphia 1876

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Certificate of Award World's Fair Chicago, 1893

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Red Cross Building.....Washington, D. C.
59th St. Subway & Tunnels..New York City
And numerous other large and well known operations

Every bbl. guaranteed to pass U. S. Government and Standard Specifications

Coplay Cement Mfg. Co.

Mill—Coplay, Lehigh Valley, Pa.
PHILADELPHIA NEW YORK BOSTON JACKSONVILLE
Output—2,000,000 Barrels Annually

DEALER COOPERATION ✦ DEALER COOPERATION ✦ DEALER COOPERATION ✦ DEALER COOPERATION ✦ DEALER COOPERATION ✦ DEALER COOPERATION ✦ DEALER COOPERATION ✦ DEALER COOPERATION

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"Sticks Like A Thistle"

FOR SURFACES of Cement, Stucco, Brick, etc.

Through our years of experience in the paint business, we have developed a coating for surfaces which is unsurpassed.

Gordon Coating is manufactured in white and eight shades.

This is a dealers' proposition. Write to-day for our interesting offer.

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Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Acme" and "Electroid" Brands Ready Roofing.

GET OUR PRICES

CHARLESTON, S. C. BIRMINGHAM, ALA.
ATLANTA, GA. NEW ORLEANS, LA.

PHOENIX PORTLAND CEMENT

Unexcelled PHOENIX PORTLAND CEMENT *for all uses*

Manufactured by

Phoenix Portland Cement Co.

NAZARETH, PA.

Sole Selling Agent, WILLIAM G. HARTRANFT CEMENT COMPANY
Real Estate Trust Building, PHILADELPHIA, PENNSYLVANIA.

The Record

behind each sack

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The argument of satisfactory use is unanswerable, and will build up for the Lehigh Dealer a constantly increasing trade.

LEHIGH CEMENT

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OFFICES:
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12 Mills—Annual Capacity Over 12,000,000 Barrels

OUR location on four big railroads enables buyers of Marquette Portland Cement to receive a shipping service unequaled; a service that satisfies the most particular.

Shipping facilities are of great importance at this time of the year.

Marquette Cement Mfg. Company
1335 Marquette Building Chicago

MARQUETTE PORTLAND CEMENT

Concrete for Permanence

Northwestern Portland Cement

NORTHWESTERN STATES PORTLAND CEMENT CO. MASON CITY, IA.

The Reliable Portland Cement

A Portland Cement for the

NORTHWEST

NORTHWESTERN STATES PORTLAND CEMENT COMPANY
MASON CITY, IOWA

WOLVERINE PORTLAND CEMENT CO. GENERAL OFFICES, COLDWATER, MICH. U.S.A.

"WOLVERINE"

THE ALRIGHT CEMENT

Made Right Sold Right
Works Right Wears Right

The Best is None Too Good For You.
Insist Upon

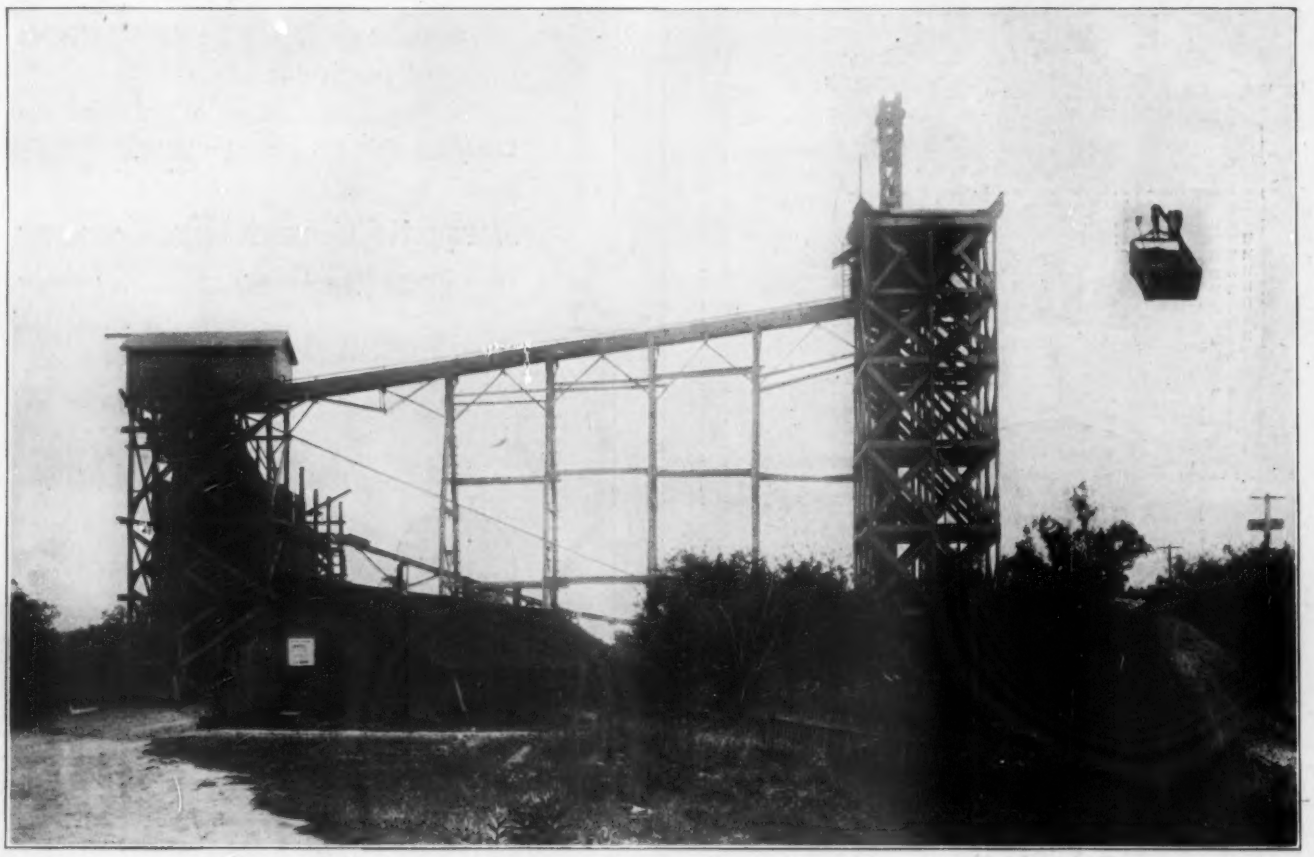
"WOLVERINE"

Write for Booklet and Quotations.
Factories at Coldwater and Quincy, Mich. Capacity 3500 Daily.

W. E. COBEAN, Sales Agent, Coldwater, Mich.

Wolverine Portland Cement Company
MAIN OFFICE, COLDWATER, MICHIGAN

Buy the Best—Dull Gravel Washing Equipment



Plant of F. L. Ward, Pontiac, Mich.

This is a novel plant which is giving excellent results. It is Dull designed, and equipped with Dull machinery, including a one and one-half yard Dull Drag Line Excavator. The cost of upkeep as well as the cost of production is reduced to a minimum. Our installations give entire satisfaction. We are engineers and the only specialists in this field.

We Also Manufacture Small Washing and Screening Outfits, Conveyors, Portable Washers, Etc.

Our Book "Plants for Washing Sand and Gravel" Just Issued, Sent on Request

THE RAYMOND W. DULL COMPANY

1910-1912 Conway Building, Chicago, Illinois

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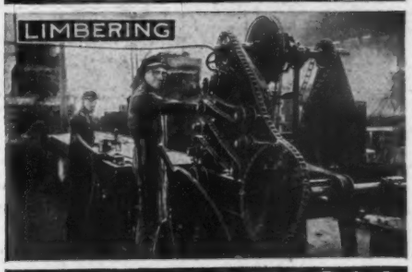

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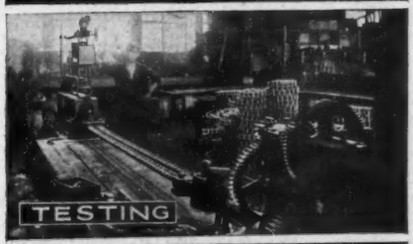
INSPECTION 7



8

INSPECTION 9

10

TEN STEPS
in the making of
Good Chain

Six are Production Steps

All performed by the best of equipment and methods

Four are Inspection Steps

Made by experienced men who detect what is unfit

The Inspection Steps are the "Meat in the Sandwich."

They determine largely the real character of the product.

They are LARGE LETTERS in the spelling of QUALITY in

Webster Sprocket Chains

The Webster M'f'g Company

CHICAGO McCormick Bldg. Tiffin, O. NEW YORK 90 West St.

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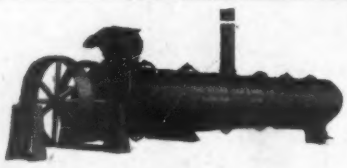

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End Dump Quarry Car.

No. 217-H Rocker Side Dump Car
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